City of Pullman

STANDARD CONSTRUCTION SPECIFICATIONS 2006 EDITION

Adopted by City Council

January 23, 2007
Ordinance No. 07-01

CITY OF PULLMAN STANDARD CONSTRUCTION SPECIFICATIONS
2006 Edition
Adopted by Ordinance #07-01

SECTION A: DEFINITIONS

1. "City of Pullman Standard Construction Specifications" means the 2006 Standard Specifications for Road, Bridge, and Municipal Construction published by the Washington State Department of Transportation as they are amended in Section C: Supplemental Specifications below and the City of Pullman Standard Drawings.

SECTION B: HOW TO OBTAIN COPIES

1. Copies of 2006 Standard Specifications may be obtained by writing:

   Washington State Department of Transportation
   Engineering Publications
   P.O. Box 47408
   Olympia, WA 98504-7408
   Phone: (360) 705-7430
   Fax: (360) 705-6861
   E-mail: LeeRC@wsdot.wa.gov

2. Copies of the Supplemental Specifications and Standard Drawings may be obtained from the Public Works Dept. office in Pullman City Hall, 325 S.E. Paradise Street, Pullman, WA 99163.

SECTION C: SUPPLEMENTAL SPECIFICATIONS

1. Division 1 of the Standard Specifications are revised and augmented as follows:

   (a) Amend the definition of "contracting agency" in Section 1-01.3 as follows:

   "Contracting Agency" is the City of Pullman.

   (b) Replace the first sentence of 1-02.7 Bid Deposit with the following :

   "When bids are anticipated to exceed $100,000, or $200,000 for multi-craft or trade projects, as estimated by the Engineer, a deposit of at least five percent (5%) of the total bid shall accompany each bid."

   (c) Insert the following as a new second paragraph to 1-05.10 Guarantees:

   "The Contractor shall indemnify and hold the City of Pullman harmless from any damage or expense by reason of failure of performance as specified in said contract or from defects appearing or developing in the material or workmanship provided or performed under said contract within a period of one year after its acceptance thereof by the City of Pullman."

(d) Add the following to Section 1-07.7(1) Load Limits:

When the gross vehicle weight of a truck delivering material to the job site exceeds the gross vehicle load limit for which the vehicle is licensed by more than 1000 pounds, as determined by scale tickets, the City will not pay for that material which exceeds the load limit.

(e) Add the following to Section 1-07.14 Responsibility for Damage:

Indemnification / Hold Harmless

The Contractor shall defend, indemnify and hold the City, its officers, officials, employees and volunteers harmless from any and all claims, injuries, damages, losses or suits including attorney fees, arising out of or in connection with the performance of this contract, except for injuries and damages caused by the sole negligence of the City. The City will not be held liable for any accident, loss or damage to the work prior to its completion and acceptance.

Should a court of competent jurisdiction determine that this contract is subject to RCW 4.24.115, then, in the event of liability for damages arising out of bodily injury to persons or damages to property caused by or resulting from the concurrent negligence of the Contractor and the City, its officers, officials, employees, and volunteers, the Contractor's liability hereunder shall be only to the extent of the Contractor's negligence. It is further specifically and expressly understood that the indemnification provided herein constitutes the Contractor's waiver of immunity under Industrial Insurance, Title 51 RCW, solely for the purposes of this indemnification. This waiver has been mutually negotiated by the parties. The provisions of this section shall survive the expiration or termination of this contract.

(f) Add the following to Section 1-07.17 Utilities and Similar Facilities:

The Palouse Empire Underground Coordinating Council provides a one call number for requesting location of underground utilities. The number is 1-800-424-5555.

(g) Replace Section 1-07.18 Public Liability and Property Damage Insurance with the following:

1.07.18 Insurance Requirements For Contractors

BIDDERS' ATTENTION IS DIRECTED TO THE INSURANCE REQUIREMENTS BELOW. IT IS HIGHLY RECOMMENDED THAT BIDDERS CONFER WITH THEIR RESPECTIVE INSURANCE CARRIERS OR BROKERS TO DETERMINE IN ADVANCE OF BID SUBMISSION THE AVAILABILITY OF INSURANCE CERTIFICATES AND ENDORSEMENTS AS PRESCRIBED AND PROVIDED HEREIN. IF AN APPARENT LOW BIDDER FAILS TO COMPLY STRICTLY WITH THE INSURANCE REQUIREMENTS, THAT BIDDER MAY BE DISQUALIFIED FROM AWARD OF THE CONTRACT.

Contractor shall procure and maintain for the duration of the contract insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by the Contractor, his agents,

representatives, employees or subcontractors. The cost of such insurance shall be included in the Contractor's bid.

No Limitation.

Contractor's maintenance of insurance as required by the agreement shall not be construed to limit the liability of the Contractor to the coverage provided by such insurance, or otherwise limit the City's recourse to any remedy available at law or in equity.

(1) Minimum Scope of Insurance

Contractor shall obtain insurance of the types described below:

(aa) Automobile Liability insurance covering all owned, non-owned, hired and leased vehicles. Coverage shall be written on Insurance Services Office (ISO) form CA 00 01 or a substitute form providing equivalent liability coverage. If necessary, the policy shall be endorsed to provide contractual liability coverage.

(bb) Commercial General Liability insurance shall be written on ISO occurrence form CG 00 01 and shall cover liability arising from premises, operations, independent contractors, products-completed operations, stop gap liability or equivalent coverage, personal injury and advertising injury, and liability assumed under an insured contract. The Commercial General Liability insurance shall be endorsed to provide the Aggregate Per Project Endorsement ISO form CG 25 03 11 85. There shall be no endorsement or modification of the Commercial General Liability insurance for liability arising from explosion, collapse or underground property damage. The City shall be named as an insured under the Contractor's Commercial General Liability insurance policy with respect to the work performed for the City using ISO Additional Insured Endorsement CG 20 10 10 01 or substitute endorsement providing equivalent coverage.

(cc) Workers' Compensation coverage as required by the Industrial Insurance laws of the State of Washington.

(2) Minimum Amounts of Insurance

Contractor shall maintain the following insurance limits:

(aa) Automobile Liability insurance with a minimum combined single limit for bodily injury and property damage of $1,000,000 per accident.

(bb) Commercial General Liability insurance shall be written with limits no less than $1,000,000 each occurrence, $2,000,000 general aggregate and a $2,000,000 products-completed operations aggregate limit.

(3) Other Insurance Provisions

The insurance policies are to contain, or be endorsed to contain, the following provisions for Automobile Liability and Commercial General Liability insurance:

(aa) The Contractor's insurance coverage shall be primary insurance as respect the City. Any insurance, self-insurance, or insurance pool coverage maintained by the City shall be excess of the Contractor's insurance and shall not contribute with it.

(bb) The Contractor's insurance shall be endorsed to state that coverage shall not be cancelled by either party, except after thirty (30) days prior written notice has been given to the City.

(4) Acceptability of Insurers

Insurance is to be placed with insurers with a current A.M. Best rating of not less than A:VII.

(5) Verification of Coverage

Contractor shall furnish the City with original certificates and a copy of the amendatory endorsements, including but not necessarily limited to the additional insured endorsement, evidencing the insurance requirements of the Contractor before commencement of the work. A completed Insurance Coverage Questionnaire shall be attached to the Certificate of Insurance.

(6) Subcontractors

Contractor shall ensure that each subcontractor of every tier obtain at a minimum the same insurance coverage and limits as stated herein for the Contractor. Upon request by the City, the Contractor shall provide evidence of such insurance.

(h) Insert the following before the first sentence of the second paragraph in Section 1-09.6(3) Force Account for Equipment:

(1) General: Rental rates for equipment that is locally available shall be established at prevailing local rates.

(i) Insert the following after the second sentence in Section 1-09.6(5) Force Account Mobilization:

The City will pay mobilization and demobilization to the nearest piece of equipment available from any source. If the Contractor chooses to bring in his own equipment from a greater distance, mobilization-demobilization shall be compensated based on the distance to the nearest equipment available.

2. Division 2 of the Standard Specifications is revised and augmented as follows:

(a) The compaction requirements of Sections 2-03.3(14)C; 2-03.3(14)I; 2-06.3 and 2-09.3 shall be amended as follows:

Earth embankments and backfill of excavations not under pavement or other structures shall be compacted to 80 percent of maximum density as provided in Section 2-03.3(14)D Amended.

Earth embankments and backfill of all excavations under pavements or other structures shall be compacted to 90 percent of maximum density as provided in Section 2-03.3(14)D Amended to 6 inches below subgrade. The zone from subgrade to 6 inches below subgrade shall be compacted to 95 percent of maximum density as provided in 2-03.3(14)D Amended.

All base materials above subgrade shall be compacted to 95 percent of maximum density as provided in Section 2-03.3(14)D Amended.

In-place density and moisture content shall be determined by nuclear densometer.

(b) Replace Section 2-03.3(14)D Compaction and Moisture Control Tests with the following:

Maximum density and optimum moisture content will be determined using ASTM test method D1557 (modified proctor).

(c) Add new Section 2-07.2 Construction Water as follows:

The Contractor may obtain water from a City fire hydrant (at no cost on City funded projects), by requesting a special hydrant outlet a minimum of 48 hours in advance. The outlet shall be used only by the Contractor and only for the project specified. The Contractor shall not operate the fire hydrant. Flow control shall be accomplished by means of the outlet valve provided. The Contractor shall furnish hoses and other transport equipment.

(d) Replace the second paragraph under "Alternative Sources" in Section 2-09.3(1)E Backfilling with the following:

Controlled density fill shall meet the following requirements:

Ingredients	Amount Per Cubic Yard
Portland cement	94 pounds
Aggregate class 1 or 2	3,300 pounds
Entrained air	8 percent minimum
Water	20 gallons maximum

3. Division 3 of the Standard Specifications is revised and augmented as follows:

(a) Replace the first three paragraphs of Section 3-01.5 Measurement with the following:

For payment purposes, all crushed, screened, or naturally occurring materials that are to be paid for by the ton shall be measured in accordance with Section 4-04.4.

4. Division 4 of the Standard Specifications is revised and augmented as follows:

(a) Replace the first paragraph of Section 4-04.4 Measurement with the following:

Crushed surfacing top course, base course, ballast, and gravel base, when processed at a central plant, will be measured by the ton.

5. Division 5 of the Standard Specifications is revised and augmented as follows:

(a) Add the following to Section 5-04.3 Construction Requirements:

Hot mix asphalt shall be ½" Commercial mix unless specified otherwise in the contract.

An approved paving contractor shall perform all asphalt paving and patching. Utility covers, except for survey monuments, located in the pavement shall be adjusted to final grade before the final lift of pavement is placed.

(b) Add the following to Section 5-04.3(12) Joints:

At the end of the workday, there shall be no longitudinal joint in the wearing course with an exposed length in excess of 25 feet.

(c) Add the following to Section 5-05.3 Construction Requirements:

An approved paving contractor shall perform all concrete paving and patching.

(d) Replace Section 5-05.3(13) Curing with the following:

Immediately after finishing operations have been completed and as soon as marring of the concrete will not occur, the entire surface of the newly placed concrete shall be coated with a cure and seal product as specified in 6-02.3(11) as amended herein.

6. Division 6 of the Standard Specifications is revised and augmented as follows:

(a) Replace Section 6-02.3(2)B Commercial Concrete with the following:

Commercial concrete shall meet the following requirements:

Coarse aggregate grading #5
564 pounds per cubic yard minimum cement content
0.49 maximum water/cement ratio
4-inch maximum slump
5 – 8 percent entrained air measured at the job site
3,000 psi minimum 28-day compressive strength

The Contractor may add up to 75 pounds per cubic yard of fly ash to the mix. Fly ash shall not be substituted for Portland cement. The Contractor shall provide a mix design to the Engineer for approval a minimum of 7 days prior to proposed use.

(b) Replace Section 6-02.3(11) Curing Concrete with the following:

Immediately after finishing and/or the disappearance of the "sheen" of surface water, concrete surfaces shall be uniformly and completely coated with an approved, clear, acrylic copolymer curing and sealing compound such as Rez-Seal 800 (14% solids minimum) manufactured by Euclid Chemical Co. in accordance with manufacturer's recommendations. To be approved, alternate products shall be the same product type and provide the same deposition of solids and performance.

7. Division 7 of the Standard Specifications is revised and augmented as follows:

(a) The compaction requirements of Division 7 shall be amended pursuant to Section C:2.(a) of these Standard Construction Specifications.

(b) Replace the last three paragraphs of Section 7-01.2 Materials with the following:

Drainpipes up to 27 inches in diameter shall be PVC sewer pipe that meets the requirements of 9-05.12(1), unless specifically approved otherwise by the Engineer. Larger diameter pipes shall be as specified by the Engineer.

(c) Replace Section 7-09.2 Description with the following:

Pipe for water mains shall be ductile iron or PVC conforming to Sections 9-30.1(1) and 9-30.1(5), respectively, unless specifically approved otherwise by the Engineer. Restrained joints shall be used only with approval by the Engineer.

(d) Replace the last sentence of the first paragraph of Section 7-09.3(23) Hydrostatic Pressure Test with the following:

The City will provide necessary labor, test pump, gauges and water to perform pressure tests of all water pipelines. The Contractor shall provide excavations, thrust blocking, test plugs, pump and air relief connections, traffic control and all other items needed to meet the requirements of this section. The Contractor shall have all pipe, fittings, and thrust block installation sufficiently complete to allow the testing to occur, prior to calling out the Engineer to perform the pressure test. The Contractor shall request pipe testing a minimum of 48 hours in advance.

(e) Add the following after the second sentence of the eleventh paragraph of Section 7-09.3(23) Hydrostatic Pressure Test:

If the utility pipeline being tested fails the initial pressure test, the Contractor shall reimburse the City for labor, material, and equipment costs for additional pressure testing and additional flushing of water pipelines on a time and material basis.

(f) Replace Section 7-09.3(24) Disinfection of Water Mains with the following:

7-09.3(24) Disinfection of Water Mains

New water lines and extensions of water lines in excess of 20 feet in length shall satisfactorily pass bacteriological tests before the new mains or extensions are connected to the existing water system. Main extensions shorter than 20 feet and sections of pipe and fittings used to connect new water mains to the existing water system shall be soaked 24 hours in a 50 mg/l chlorine solution. In addition the connecting pipe and fittings shall be swabbed with a calcium hypochlorite paste immediately before they are installed.

The Contractor shall dose all lengths of pipe with dry, high test calcium hypochlorite (65-70% chlorine) as the pipeline is constructed. The dosage rate in grams of 65% test calcium hypochlorite per 20 foot length of pipe equals

$$0.008431 \times d^2$$

in which "d" is the diameter in inches.

The Contractor shall request pipe testing a minimum of 48 hours in advance. The City will provide necessary equipment and labor, water and materials to flush and perform bacteriological tests of all water pipelines. Disinfection, flushing and testing shall be performed as recommended by the American Water Works Association. The Contractor shall provide excavations, thrust blocking, traffic control, plugs, caps, fittings, and the other items needed to meet the requirements of this section. The Contractor shall provide a tank truck to receive and dispose of flushing water if a sanitary sewer is not readily available.

If the utility pipeline being tested fails the initial bacteriological test, the Contractor shall reimburse the City for labor, material, and equipment costs for additional bacteriological testing and additional flushing of water pipelines on a time and material basis. The Engineer may order a second bacteriological test at his discretion 48 hours after final connections are made and before the new line is placed in service. The City will pay the cost of this test. If this test fails, costs of flushing and additional tests shall be the responsibility of the Contractor.

(g) Delete Sections 7-09.3(24)A, 7-09.3(24)B, 7-09.3(24)C, 7-09.3(24)D, 7-09.3(24)E, 7-09.3(24)F, 7-09.3(24)G, 7-09.3(24)H, 7-09.3(24)I, 7-09.3(24)J, 7-09.3(24)K, 7-09.3(24)L, 7-09.3(24)M, 7-09.3(24)N, and 7-09.3(24)O.

(h) Replace the first paragraph of Section 7-17.2 with the following:

Pipe for sewer mains shall be ductile iron sewer pipe or solid wall PVC pipe conforming to Sections 9-05.13 and 9-05.12, respectively, unless specifically approved otherwise by the Engineer.

8. Division 9 of the Standard Specifications is revised and augmented as follows:

(a) The requirements of Sections 9-02.2(1) and 9-02.2(2) are waived by the Engineer on non-federally funded projects using less than 3000 tons of asphalt concrete pavement.

(b) The gradation for Top Course and Keystone in Section 9-03.9(3) Crushed Surfacing is replaced with the following:

Sieve Size	Percent Passing
1"	100
¾"	94-100
¼" square	55-75
U.S. No. 40	8-24
U.S. No. 200	10.0 max.
% Fracture	75 min.
Sand Equivalent	35 min.

(c) Replace Section 9-03.12(3) Gravel Backfill for Pipe Zone Bedding with the following:

Gravel backfill for pipe bedding shall meet the requirements for crushed surfacing top course in Section 9-03.9(3) Amended.

(d) Replace Section 9-05.1(5) PVC Drain Pipe with the following:

PVC pipe for drains shall meet the requirements of Section 9-05.12.

(e) Add the following sentence to 9-30.2(1) Ductile Iron Pipe:

All fittings and valves shall be mechanical joint unless otherwise shown on the construction drawings.

(f) Replace the last paragraph of section 9-30.6(4) Service Fittings with the following:

Fittings used for polyethylene tubing shall be compression type with stainless steel liners.

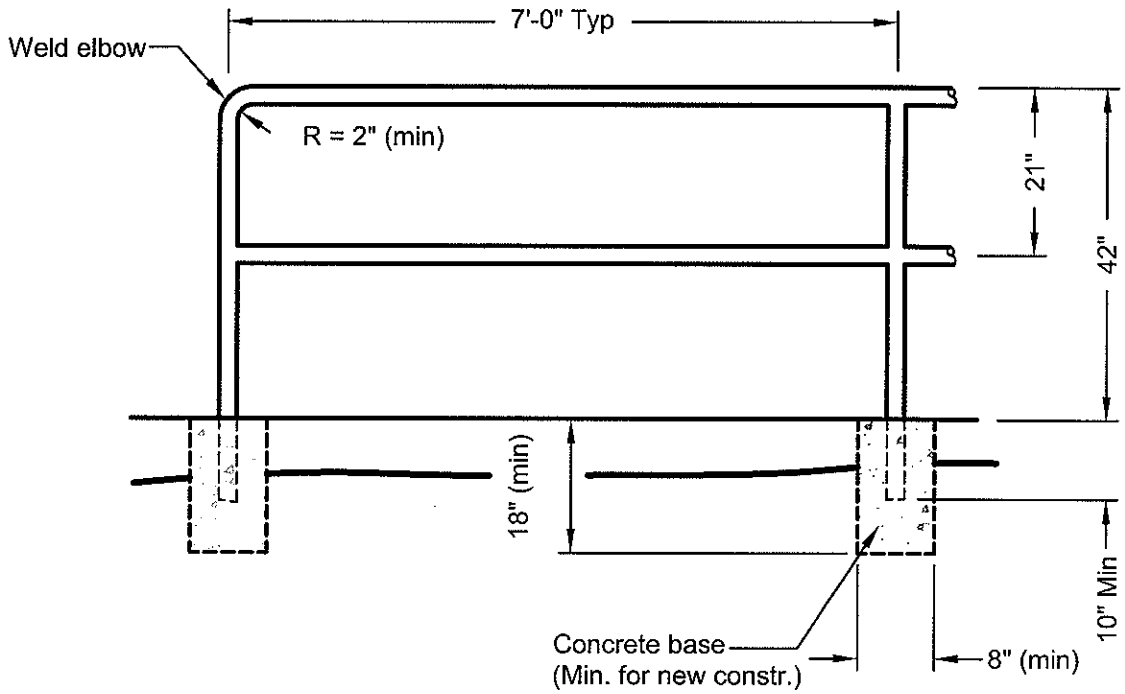
CITY OF PULLMAN
STANDARD ABBREVIATIONS

@	at
A.C.	asphalt concrete
ACP	asphalt concrete pavement
Aggr.	aggregate
Asph.	asphalt
Bldg.	building
BM	benchmark
Bng.	bearing
CL	centerline
CAP	corrugated aluminum pipe
C.B.	catch basin
C.F.	cubic foot
Cl.	class
CI.	cast iron
CMP	corrugated metal pipe
Conc.	concrete
Const.	Construct, construction
CSTC	crushed surfacing top course
CSBC	crushed surfacing base course
C.Y.	cubic yard
Dr.	drive
Drwy.	driveway
Dwg.	drawing
E	east
Ea.	each
Elev.	elevation
EOP	edge of pavement
Exc., Excav.	excavate; excavation
Exist.	existing
FH	fire hydrant
Fin.	finish; finished
Ft.	foot
HMA	hot mix asphalt
In.	inch
Inv.	invert
Jt.	joint
Lb.	pound
L.F.	linear foot
L.S.	lump sum
Lt.	left
Max.	maximum
MH	manhole
Min.	minimum
N	north
No.	number
Pavt.	pavement
PC	point of curvature
PCC	portland cement concrete
PI	point of intersection
PT	point of tangency
Rt.	right
S	south
San.	sanitary
S.D.	storm drain
Sdwk.	sidewalk
S.F.	square foot
Sht.	sheet
Spec.	specifications
St.	street
Sta	station
Std.	Standard
S.Y.	square yard
T.	ton
Typ.	typical
VC	vertical curve
W	west
Yd.	Yard

City of Pullman Engineering Division

STANDARD DRAWINGS

CONTENTS



NOTES:

1. Top railing shall be 2 inch Schedule 40 clean black steel pipe. Stanchions and intermediate rails shall be 1-1/2 inch (min) Schedule 40 clean black steel pipe.
2. Weld pipe joints. Remove all sharp edges and burrs.
3. Stanchions shall be welded, bolted, grouted, or otherwise firmly set to prevent movement of the rail. Stanchions for new construction shall be set in concrete as shown above.
4. Stanchions shall be vertical regardless of the slope of the wall, sidewalk, or ground surface.
5. The installed railing shall be solvent-cleaned, made free of rust or other contaminants, and coated with gloss black Sherwin-Williams Kem-400 coating # F75B401, or Sher-Kem coating # 6016-49349387, or approved equal.
6. Total dry paint film thickness shall be no less than 4.5 mils.
7. Alternate materials may be used with the prior approval of the Engineer.

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AutoCAD: Railing - Pedestrian

DRR

PEDESTRIAN RAILING

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CITY OF PULLMAN
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ASPHALT SECTION FOR RESIDENTIAL STREETS

CITY OF PULLMAN
ENGINEERING DIVISION

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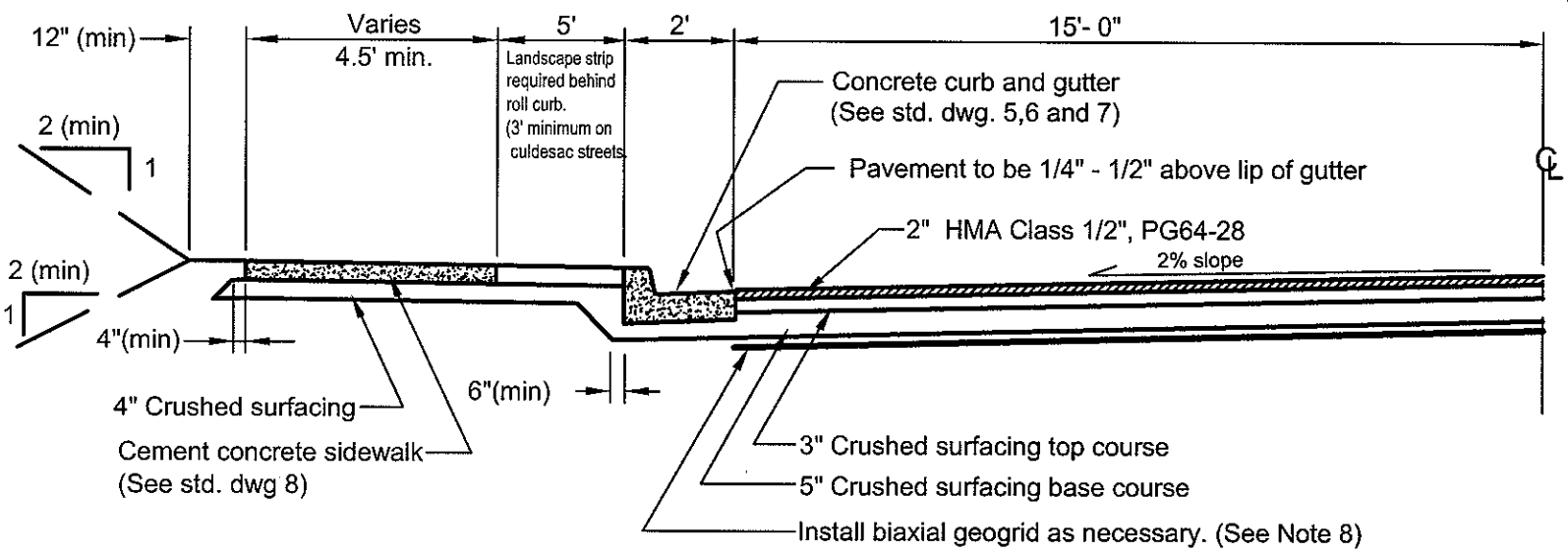
ADOPTED: January 23, 2007

AutoCAD: Asphalt Street Typical Section



TYPICAL HALF-SECTION

NOTES:

1. Half-Section is symmetrical about the centerline.
2. All dimensions are minimums.
3. This design is for typical clayey-silt soils found in the Pullman area. Where other soil types are encountered, the Engineer may establish greater or lesser minimum thicknesses.
4. In solid rock, cut slope may be steepened from 2 : 1 to 1/2 : 1
5. In cuts greater than 6 feet in height, acceptable side slopes will be determined by the Engineer based on engineering analysis.
6. Compact the top 6 inches of subgrade to 95% of maximum theoretical density : ASTM D1557 (Modified Proctor method).
7. Standard 33-foot-wide streets, or narrower, shall be paved in 2 passes, maximum.
8. Biaxial geogrid shall consist of Tensar brand BX-1200 (or equal) UV-protected geogrid. Geogrid shall be placed only where necessary to meet minimum structural specifications and/or constructability requirements, as directed by the Engineer or his designated field inspector.

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CONCRETE SECTION FOR RESIDENTIAL STREETS

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CITY OF PULLMAN
ENGINEERING DIVISION

ADOPTED: January 23, 2007

AutoCAD: Concrete Street Typical Section

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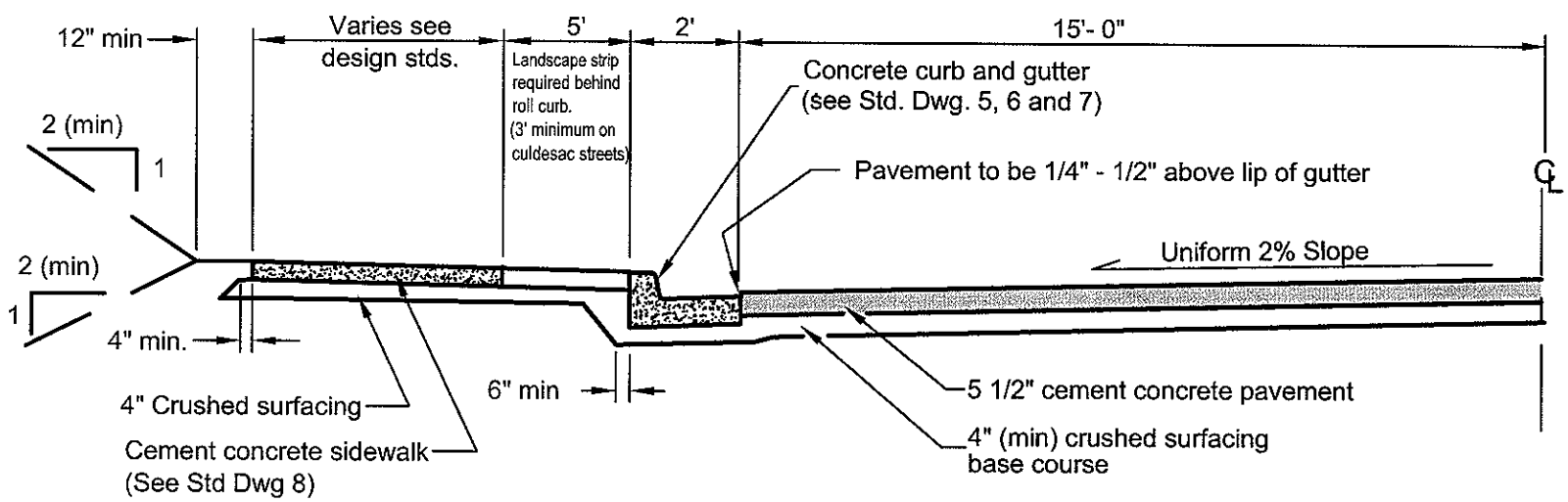
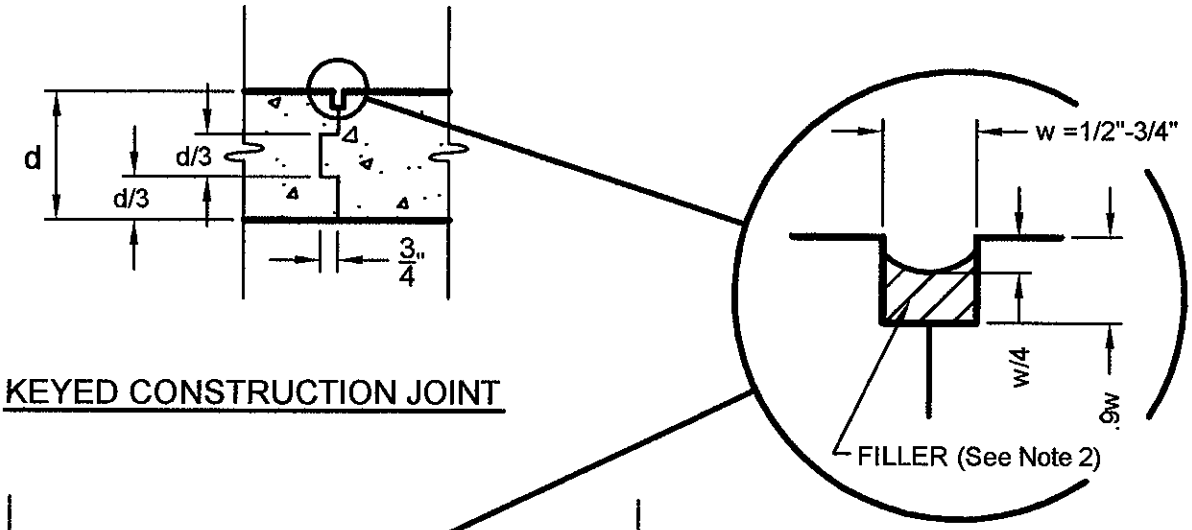


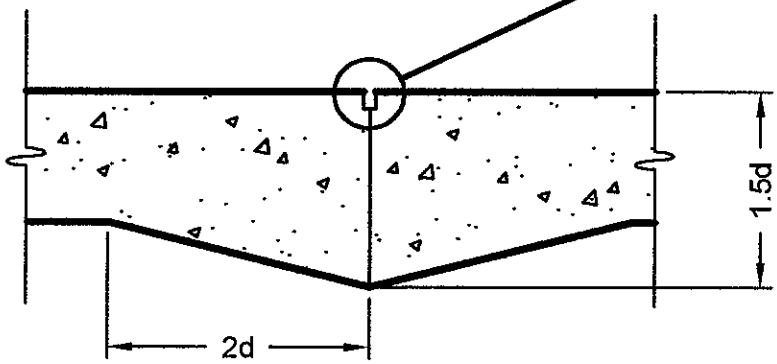
TYPICAL HALF-SECTION

NOTES:

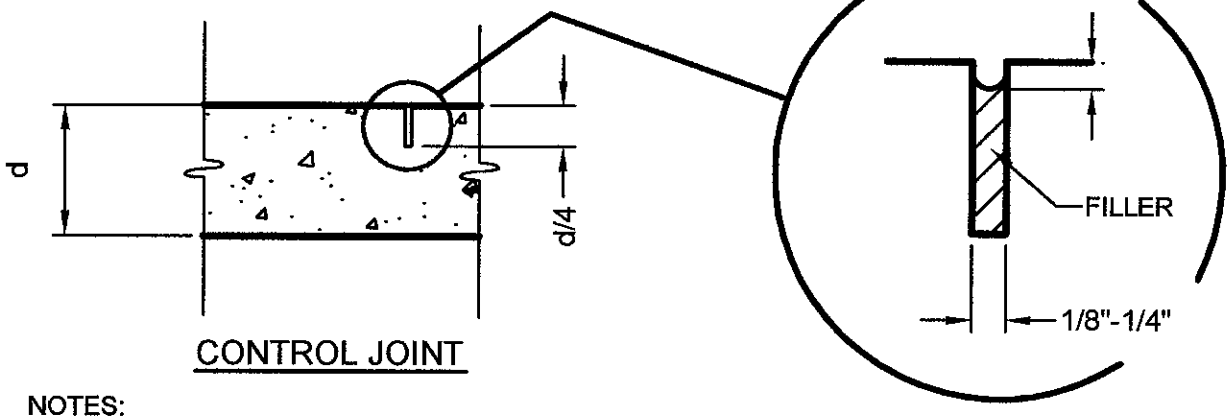
1. Section as drawn is symmetrical about the centerline.
2. All dimensions are minimums.
3. Cement concrete pavement shall comply with the 2006 edition of the Standard Specifications. Compliance is required with the city of Pullman Standard Construction Specifications, Section C-6.
4. In solid rock, the cut slope may be steepened from 2 : 1 to 1/2 : 1 .
5. In cuts greater than 6 feet in height, acceptable side slopes will be determined by the Engineer based on engineering analysis.
6. Curb and gutter may be cast integrally with the pavement.
7. Compact the top 6 inches of subgrade to 95% (min) of maximum theoretical density per ASTM D1557 (Modified Proctor Method).



KEYED CONSTRUCTION JOINT



THICKENED EDGE
CONSTRUCTION JOINT



CONTROL JOINT

NOTES:

1. Control joints may be tooled, impressed, or sawn.
2. Sawn or open tooled joints shall be filled with approved elastomeric filler.

AutoCAD: Joints - Concrete Pavement

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CONCRETE PAVEMENT JOINT ALTERNATIVES

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CITY OF PULLMAN
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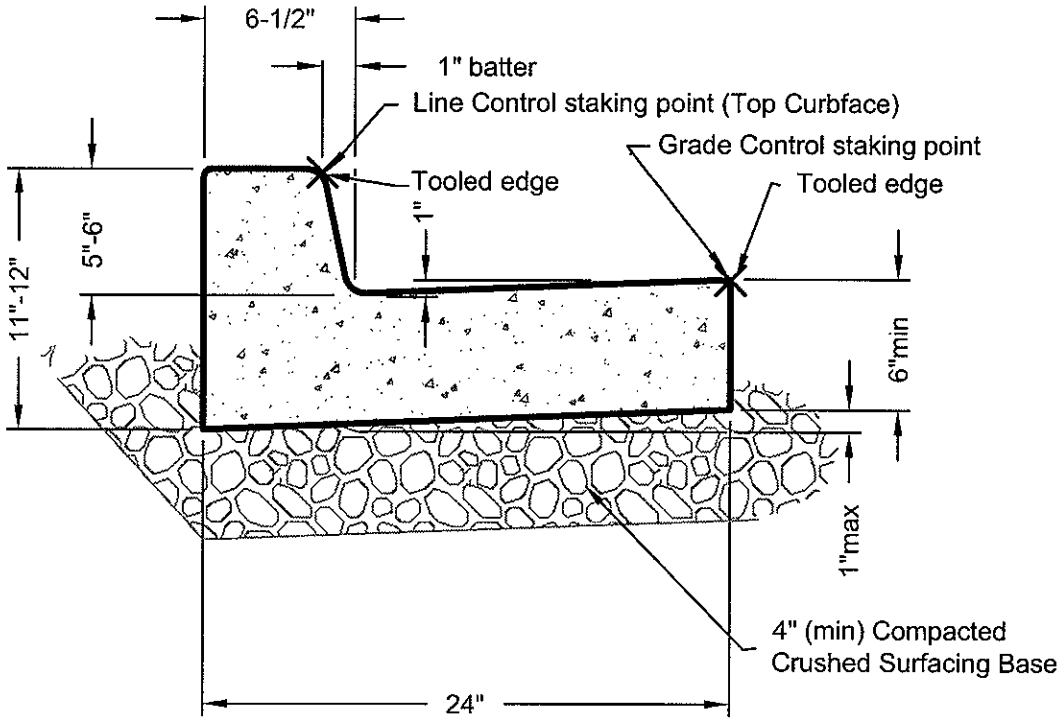

TYPICAL SECTION

NOTES:

1. Control joints with tooled edges shall be cut 1/4 to 1/3 the section depth at 10-foot intervals or as directed by the Engineer. Curb joints shall match street joints when adjacent to concrete pavement.
2. Through joints and full form plates shall not be used except where specifically approved by the Engineer.
3. All exposed corners shall be tooled to a 1/2-inch (min) radius.
4. Do not use expansion joints.
5. Construction stakes shall establish the face of curb for horizontal control and lip of gutter for vertical control.

AutoCAD: Curb & Gutter

dwc 3-00
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CURB AND GUTTER

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CITY OF PULLMAN
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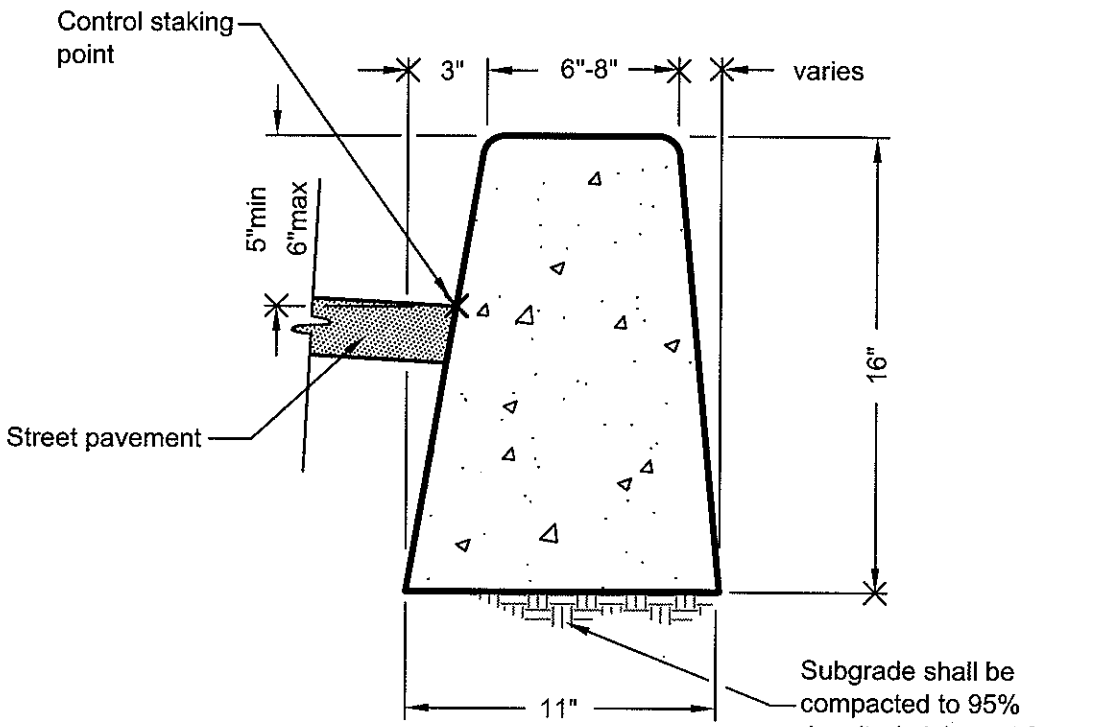

TYPICAL SECTION

NOTES:

1. Control joints with tooled edges shall be cut 1/4 to 1/3 of the section depth at 10 foot intervals. Curb joints shall match street joints when adjacent to concrete street pavement.
2. Through joints and full form plates shall not be used except where specifically approved by the engineer.
3. All exposed corners shall be finished to a 1/2 inch minimum radius.
4. Do not use expansion joints
5. Construction stakes shall establish face of curb for horizontal control and pavement grade for vertical control.
6. Standing curb shall be used only where the existing curb is predominantly standing curb and with the Engineer's approval.

AutoCAD: Curb - Standing Style

dwc 3-00
DRR

STANDING CURB

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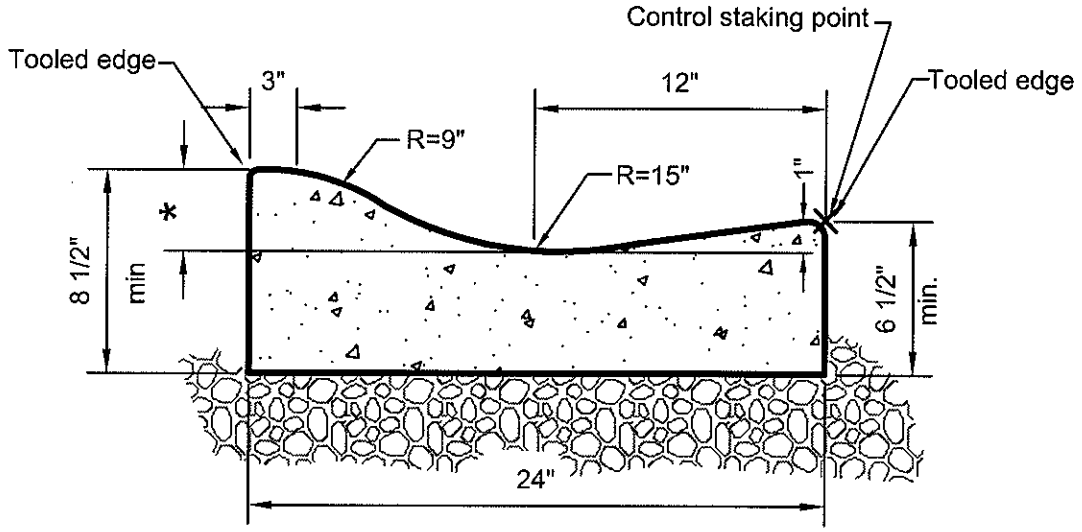
CITY OF PULLMAN
ENGINEERING DIVISION

ADOPTED: January 23, 2007



* 3 1/2" max, 2 1/2"min.

TYPICAL SECTION

NOTES:

1. Rolled curb and gutter shall not be used :
   A. On streets in commercial and industrial zoned areas.
   B. On streets with longitudinal (lengthwise) grades in excess of 10 percent.
   C. On any arterial.
   D. Without prior approval of the Engineer.
2. Changes from standard curb and gutter to rolled curb require a smooth transition of 30 inches minimum length.
3. Joint spacing, base rock, and materials shall be as for standard curb and gutter.
4. Control joints with tooled adges shall be cut ¼ to ⅓ of the section depth at 10-foot intervals, or as directed by the Engineer. Curb joints shall match street joints when adjacent to concrete pavement.
5. All exposed corners shall be finished to a 1/2-inch radius (min).
6. Catch basins in rolled curb and gutter shall be similar in material and dimensions to standard frames and grates, but with no hood, and with a cross section approximating that of the rolled curb and gutter. Use East Jordan Iron Works 7711 Series (Was IFCO # 501 frame and grate or approved equal.
7. Standard curb ramps are required in rolled curb.
8. Do not use expansion joints.
9. Construction stakes shall establish lip of gutter for both horizontal and vertical control.
10. Sidewalk adjacent to rolled curb requires a 5-foot-wide landscape strip between the back of curb and the sidewalk; 3-foot minimum on culdesac streets.

dwc 3-00

AutoCAD: Curb & Gutter - Rolled

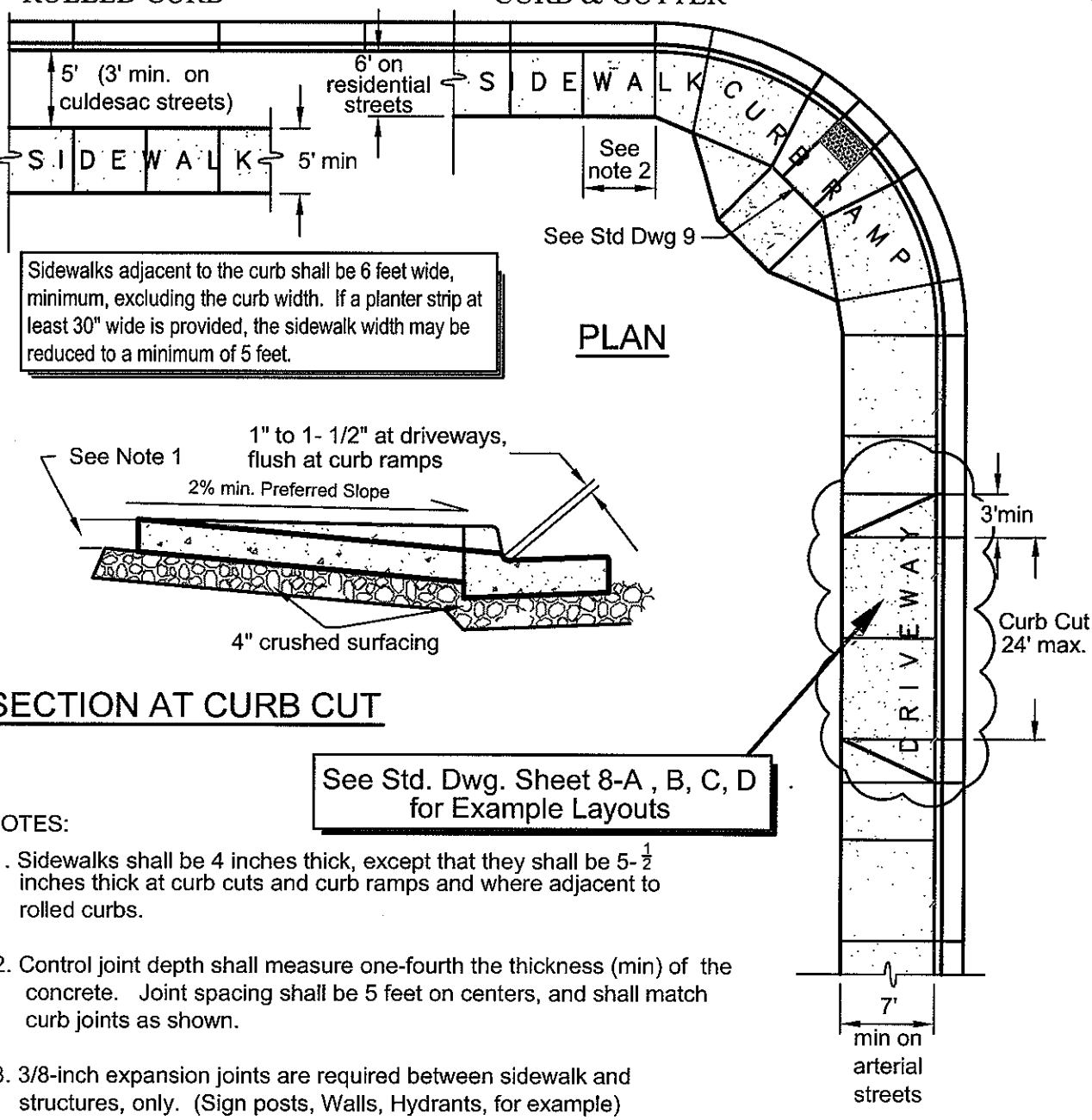
ZGS

ROLLED CURB AND GUTTER

PAGE NO: 7

CITY OF PULLMAN
ENGINEERING DIVISION

ADOPTED: January 23, 2007



Sidewalks adjacent to the curb shall be 6 feet wide, minimum, excluding the curb width. If a planter strip at least 30" wide is provided, the sidewalk width may be reduced to a minimum of 5 feet.

See Std. Dwg. Sheet 8-A , B, C, D for Example Layouts

NOTES:

1. Sidewalks shall be 4 inches thick, except that they shall be 5-$\frac{1}{2}$ inches thick at curb cuts and curb ramps and where adjacent to rolled curbs.

2. Control joint depth shall measure one-fourth the thickness (min) of the concrete. Joint spacing shall be 5 feet on centers, and shall match curb joints as shown.

3. 3/8-inch expansion joints are required between sidewalk and structures, only. (Sign posts, Walls, Hydrants, for example)

4. Curb cuts wider than 24 feet require prior approval of the Engineer.

5. Driveways shall be constructed to provide a 3-foot minimum walkway with 2% maximum cross-slope through the driveway. The maximum slope for driveway ramps from the curb to the walkway is 10%.
   Longitudinal sidewalk grade transitions shall be 5% maximum slope as measured relative to existing grade.
   See Standard Drawing Sheets 8-A, 8-B, 8-C, and 8-D for Example Layouts.

AutoCAD:Curb & Sidewalk Layout

06 dwc
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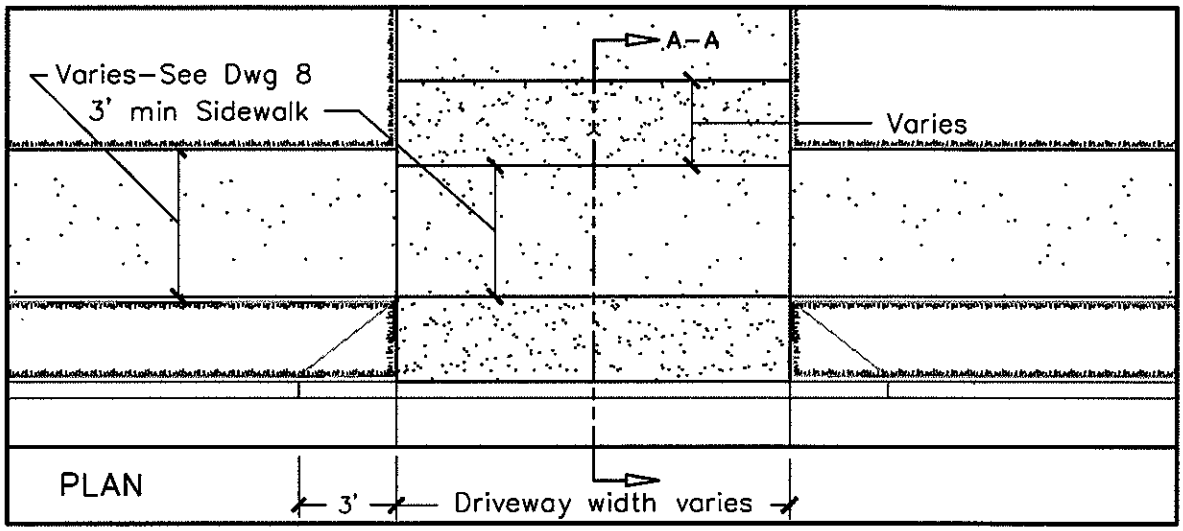
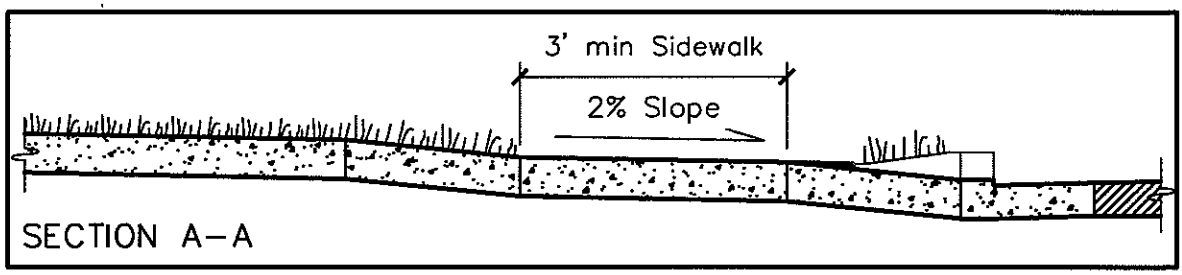
CURB AND SIDEWALK LAYOUT

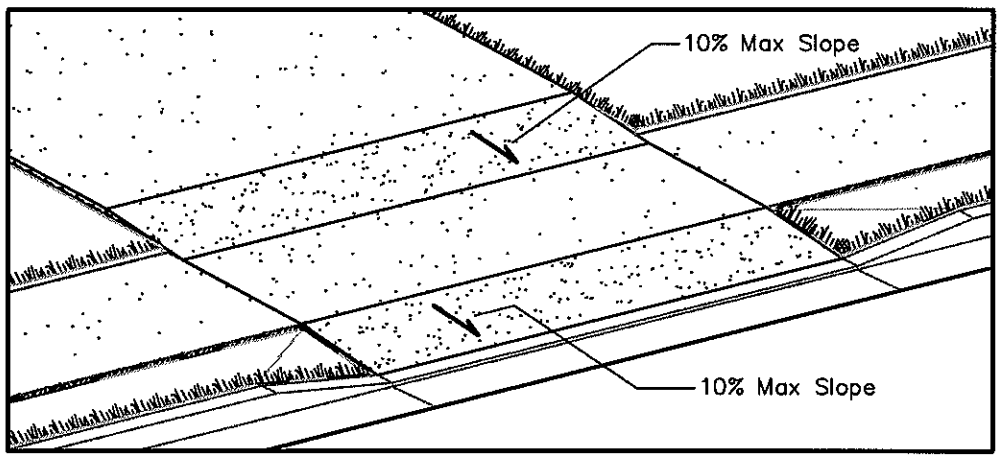
PAGE NO: 8

CITY OF PULLMAN
ENGINEERING DIVISION

ADOPTED: January 23, 2007







NOTES:

1. Sidewalks shall be 4 inches thick, except that they shall be 5-½ inches thick at curb cuts and curb ramps and where adjacent to rolled curbs.

AutoCAD:Driveway Crossings Alternatives 8A-D nri-06

DRIVEWAY CROSSINGS - A

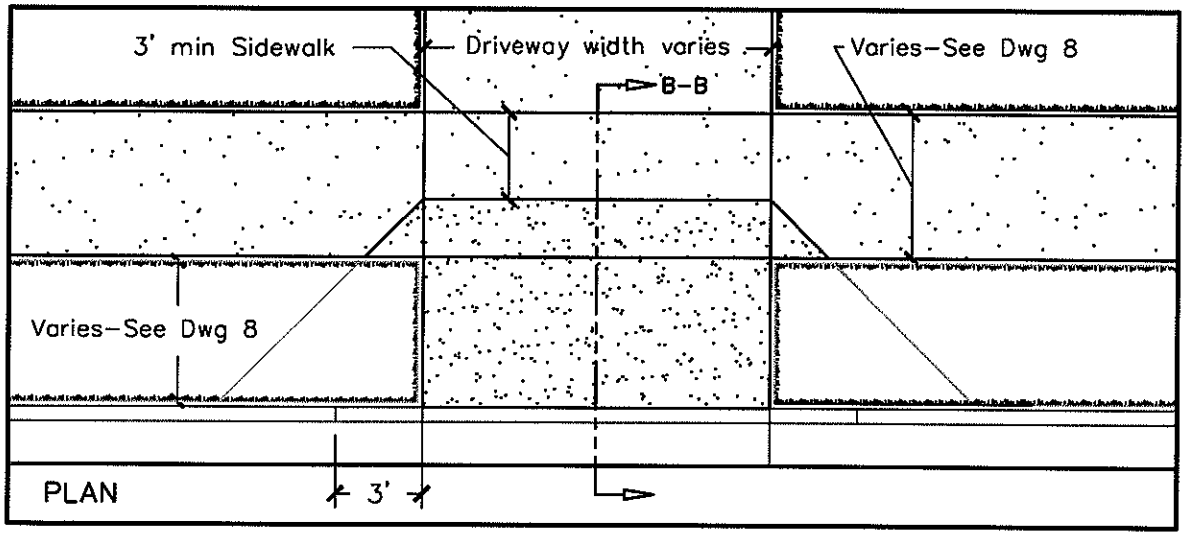
SPLIT APRON SIDEWALK

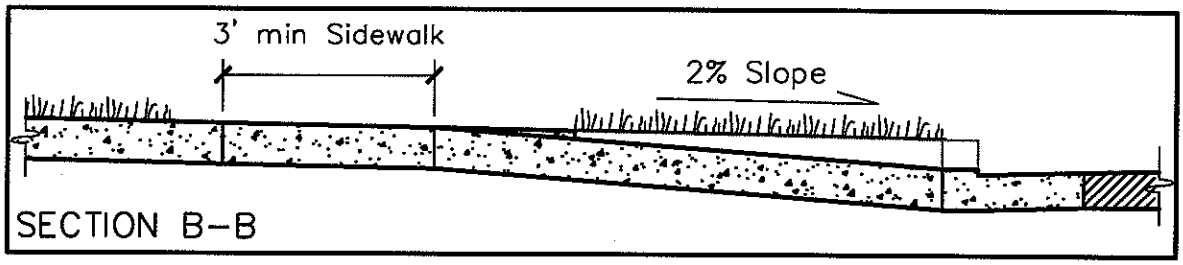
PAGE NO:

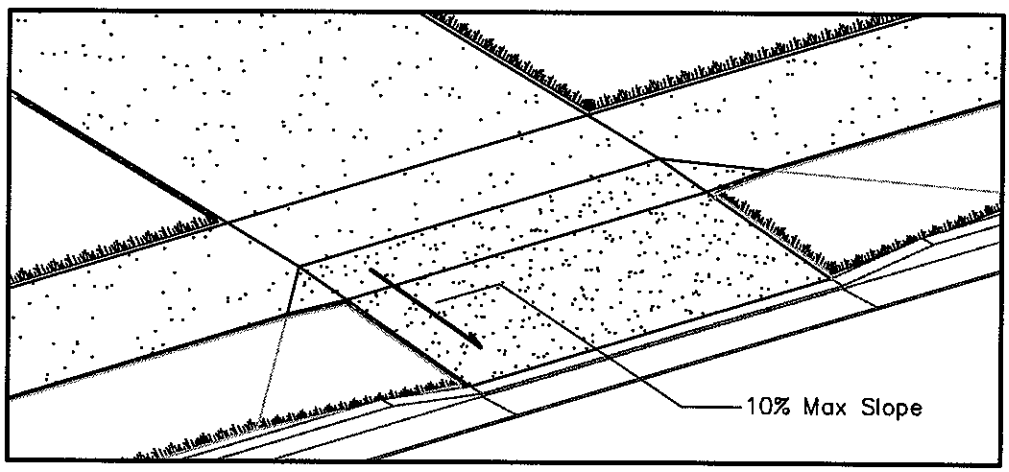
8A

CITY OF PULLMAN
ENGINEERING DIVISION

ADOPTED: January 23, 2007







NOTES:

1. Sidewalks shall be 4 inches thick, except that they shall be 5-½ inches thick at curb cuts and curb ramps and where adjacent to rolled curbs.

AutoCAD:Driveway Crossings Alternatives 8A-D

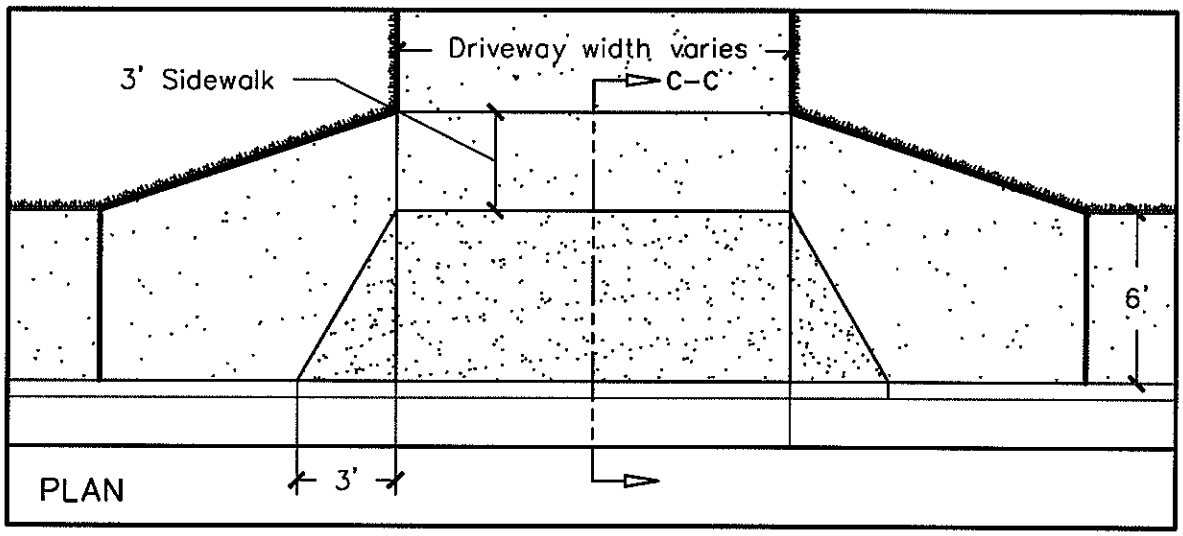
DRIVEWAY CROSSINGS - B

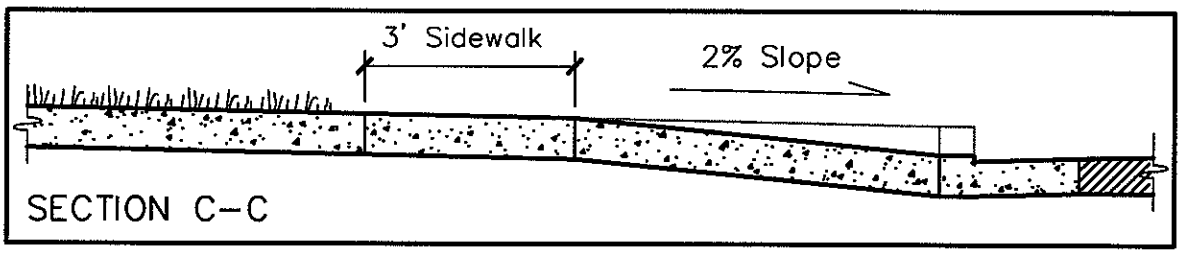
PLANTING STRIP SIDEWALK

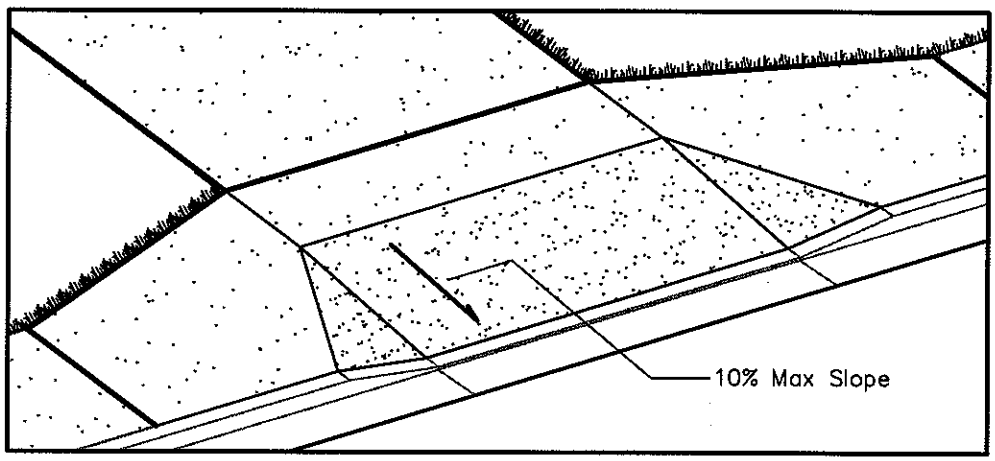
PAGE NO: 8B

CITY OF PULLMAN
ENGINEERING DIVISION

ADOPTED: January 23, 2007







NOTES:

1. Sidewalks shall be 4 inches thick, except that they shall be 5-½ inches thick at curb cuts and curb ramps and where adjacent to rolled curbs.

AutoCAD:Driveway Crossings Alternatives 8A-D

DRIVEWAY CROSSINGS - C

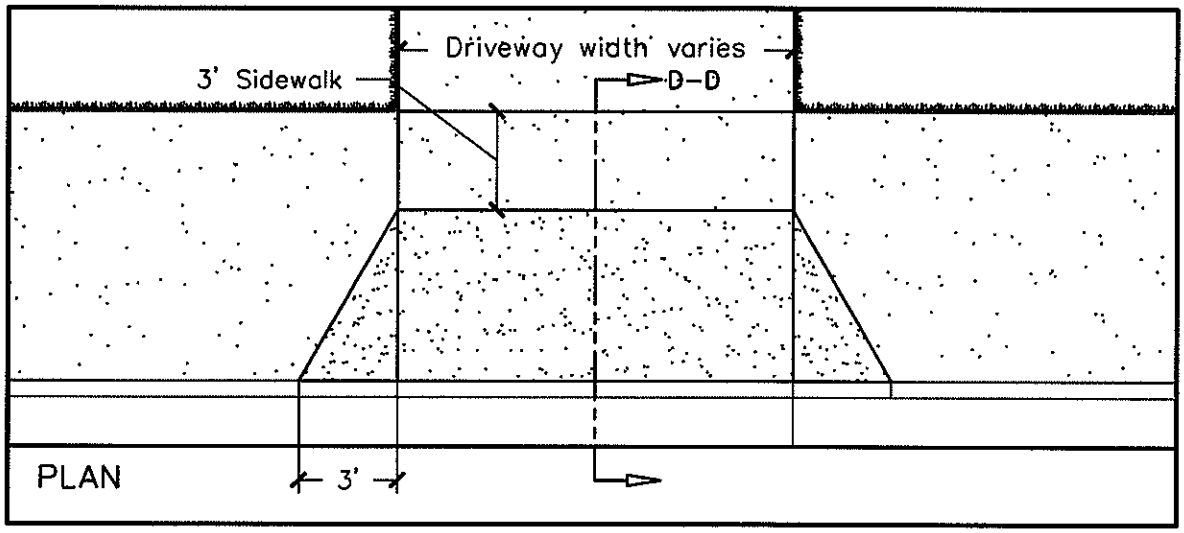
JOGGED SIDEWALK

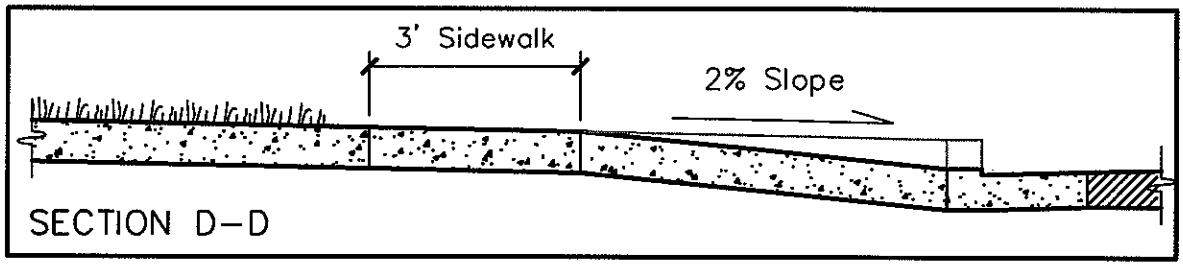
PAGE NO:

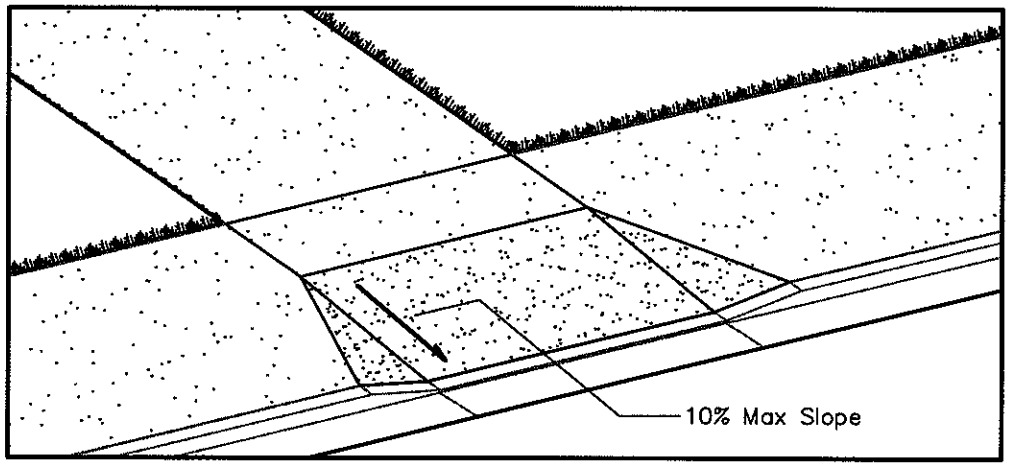
8C

CITY OF PULLMAN
ENGINEERING DIVISION

ADOPTED: January 23, 2007







NOTES:

1. Sidewalks shall be 4 inches thick, except that they shall be 5-½ inches thick at curb cuts and curb ramps and where adjacent to rolled curbs.

AutoCAD:Driveway Crossings Alternatives 8A-D

DRIVEWAY CROSSINGS - D

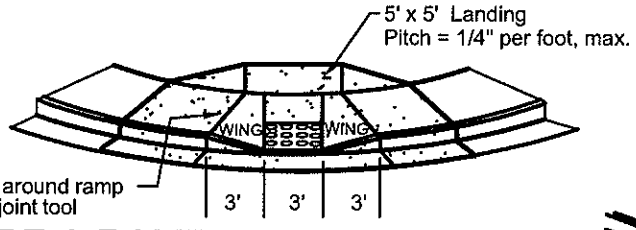
WIDE SIDEWALK

PAGE NO:

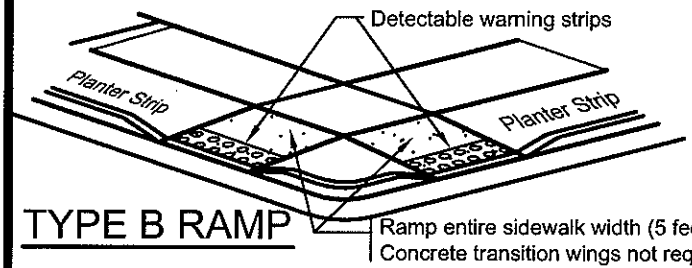
8D

CITY OF PULLMAN
ENGINEERING DIVISION

ADOPTED: January 23, 2007

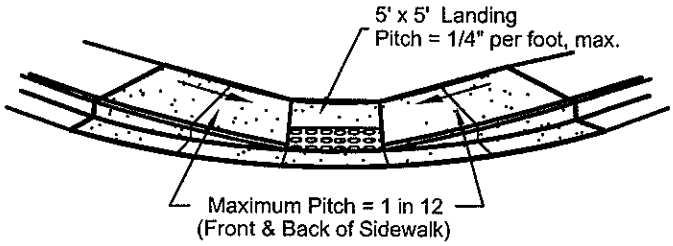


TYPE A RAMP



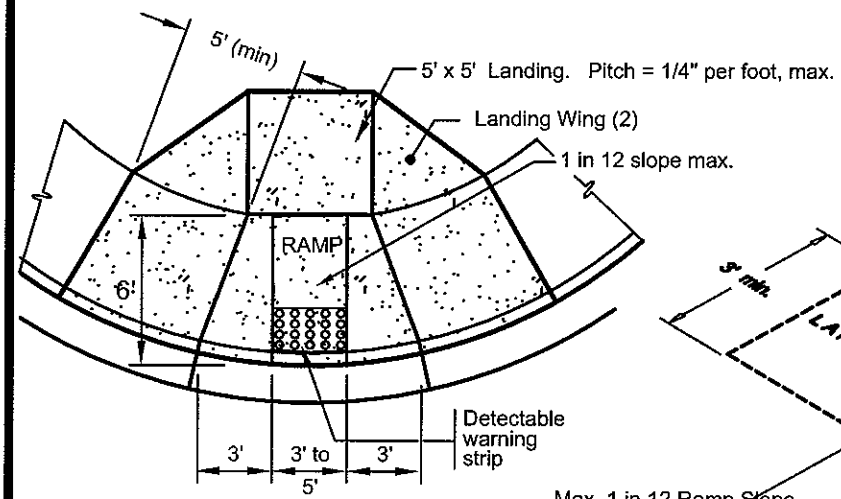
TYPE B RAMP

Ramp entire sidewalk width (5 feet, max.):
Concrete transition wings not required

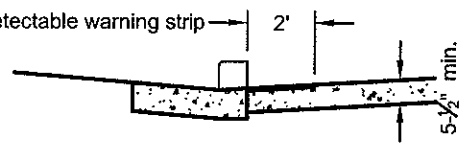


TYPE C LANDING - RAMP

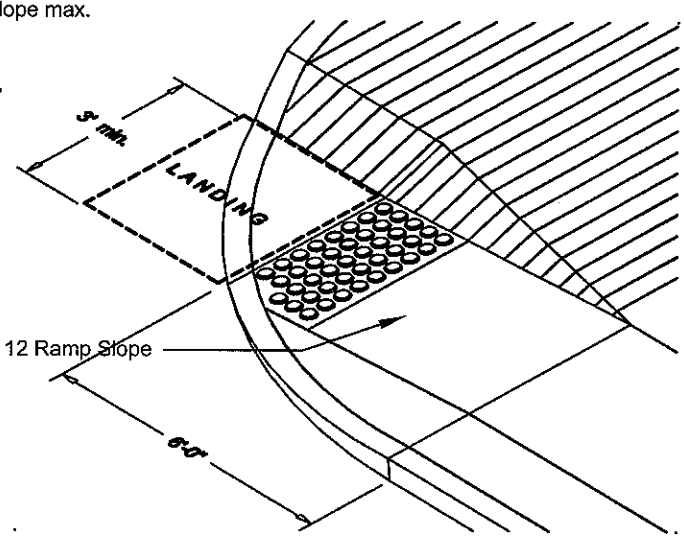
Full-Radius Style



PLAN (Type "A")



CROSS SECTION



PARALLEL CURB RAMP

NOTES:

1. Ramp cross slopes and landing slopes should not exceed 2%.
2. Ramps shall be flush at the gutter flow line.
3. Construction of Type B ramps is preferred where both sidewalks are set back from the curb by an earth strip.
4. Curb Ramps are required with all curb types.
5. Detectable warning strips shall consist of a 24" x [Ramp Width] truncated-dome style surface. Color shall be Federal Yellow.
6. Construction of Type C ramps is allowed only where site conditions preclude contruction of Type A or B ramps; obtain Engineer's approval before constructing Type C ramps.

AutoCAD: Curb Ramp - 2006 Rev.dwg

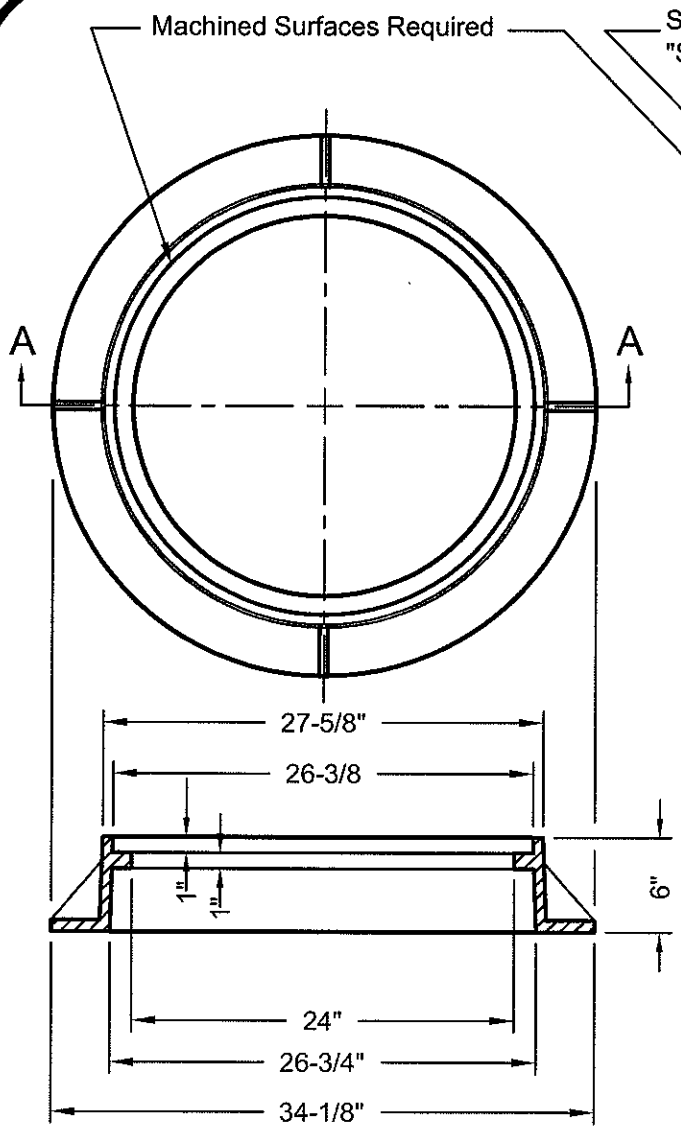
06.dwg

CURB RAMP DETAILS FOR ARTERIAL STREETS

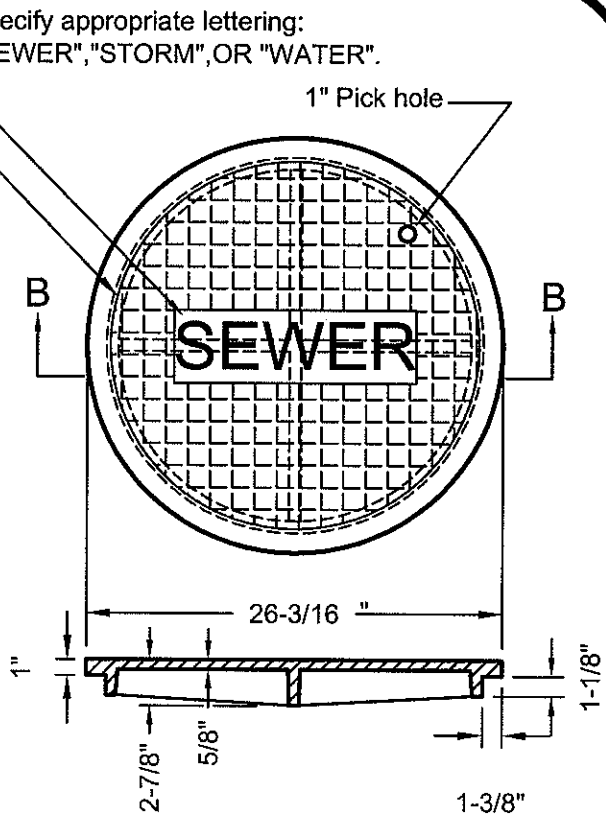
PAGE NO: 9

CITY OF PULLMAN
ENGINEERING DIVISION

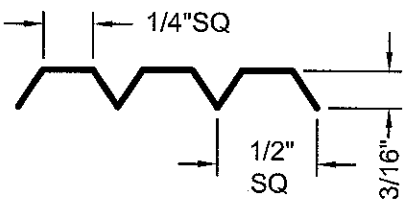
ADOPTED: January 23, 2007



SECTION A-A



SECTION B-B



COVER ANTISKID DESIGN DETAIL

NOTES:

1. See Section 7-05 of the Standard Specifications for additional details.
2. Use East Jordan Iron Works B-25 Type 2 Lid (Was IFCO # 822 frame and cover) or approved equal. D&L Foundry A-2004 lids are not approved equals.
   Frame Material: ASTM A48 grey iron;
   Cover Material : ASTM A536 Class 80-55-06 ductile iron.
3. The Engineer may approve shorter frames down to 4 inch (min) where shallow sewers limit adjustments above standard cones.
4. Adjust frame to grade so that top of lid is 1/4" to 3/8" below finished grade.

AutoCAD: Manhole Frame & Cover

06 dwc
DRR

MANHOLE FRAME AND COVER

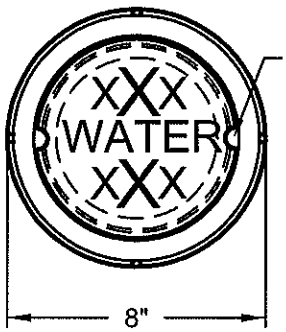
PAGE NO: 10

CITY OF PULLMAN
ENGINEERING DIVISION

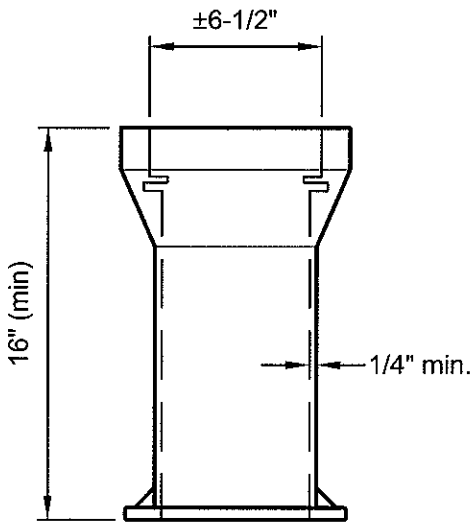
ADOPTED: January 23, 2007

NOTES:

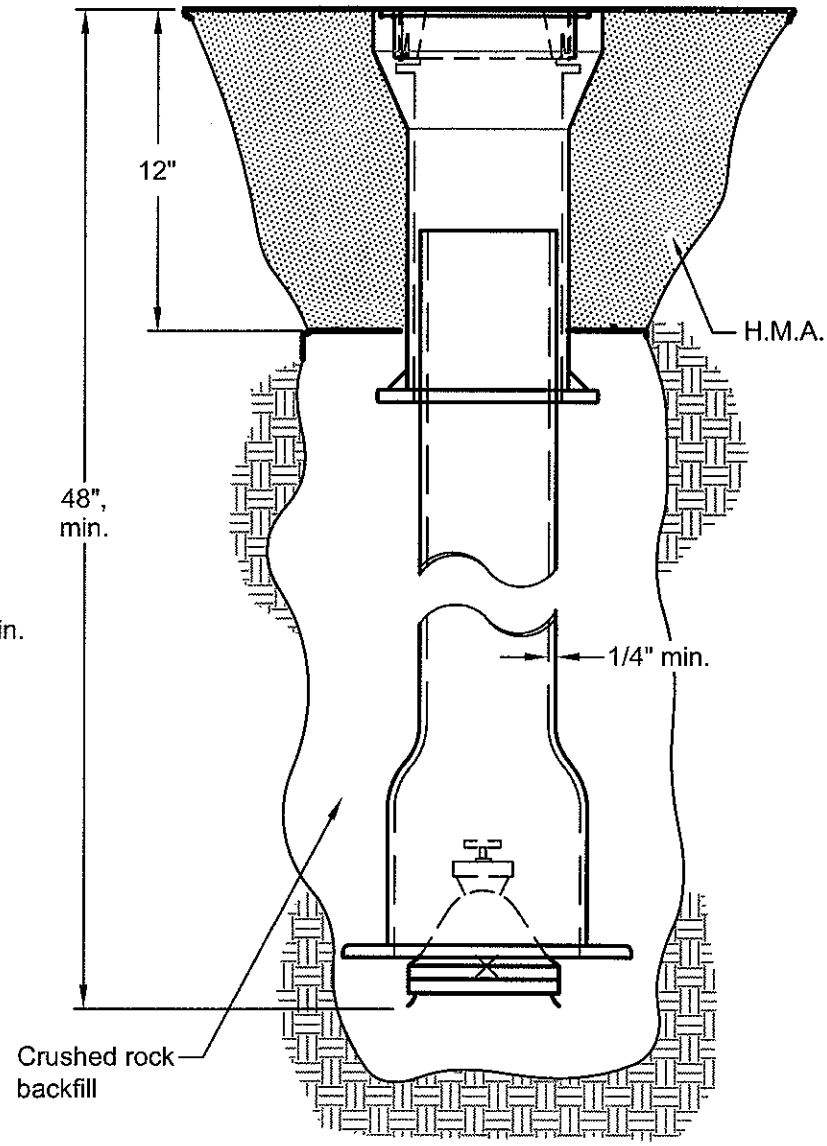
1. Valve box and cover shall be ASTM Class 30 grey iron.
2. Use with matching gate valve box extension pipe.
3. See utility cover adjustment, Standard Drawing 23. Use TYLER ® Series 6855, East Jordan Series 8555, or approved equal.
4. Compact hot mix asphalt patch in no greater than 3-inch lifts.



PLAN



SIDE VIEW



TYPICAL INSTALLATION

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ZGS

AutoCAD: Waterline Valve Box & Cover

VALVE BOX AND COVER

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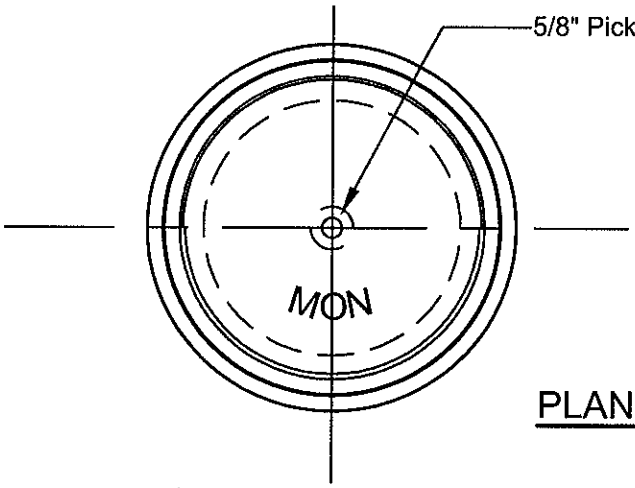
CITY OF PULLMAN
ENGINEERING DIVISION

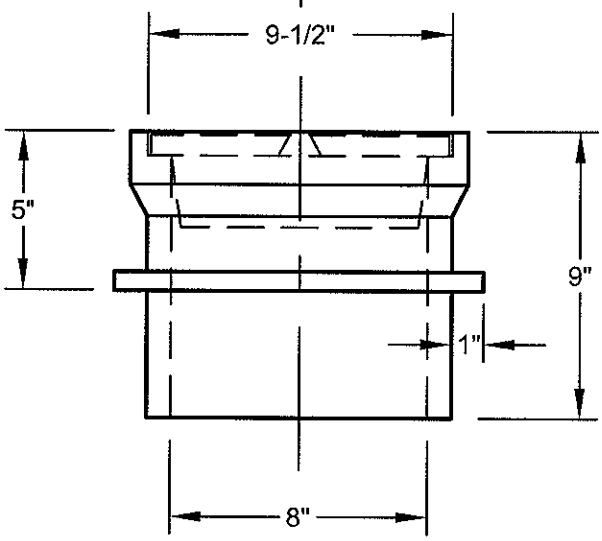
ADOPTED: January 23, 2007



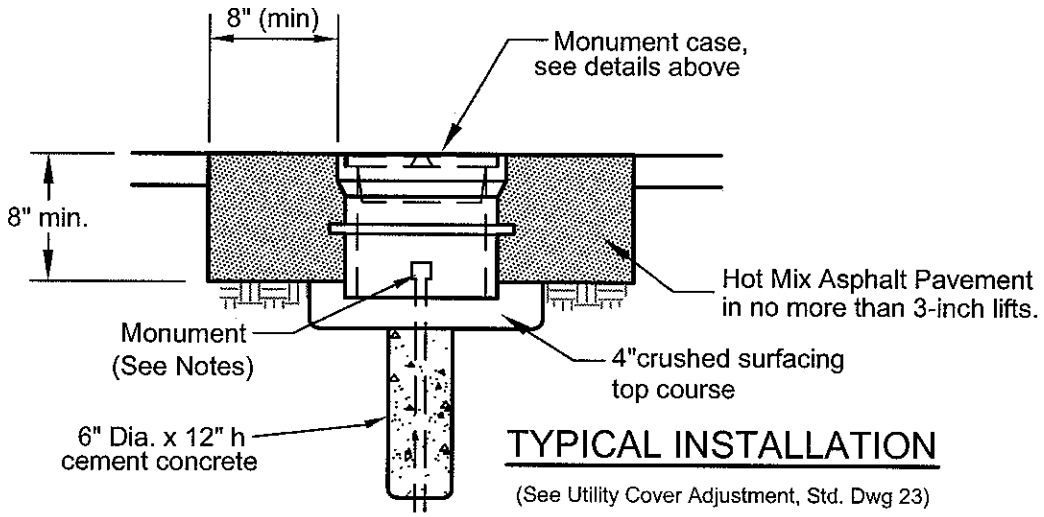
PLAN

NOTES:

1. Monument case shall be ASTM class 30 grey iron or better.
2. Monument shall be installed in the case by a licensed surveyor after completion of road construction.
3. Monument shall consist of a 5/8-inch diameter by 30-inch long deformed steel bar with a licensed surveyor's top cap and license number, punched or tacked to show center point.



SIDE VIEW



TYPICAL INSTALLATION

(See Utility Cover Adjustment, Std. Dwg 23)

AutoCAD: Monument Details

dwc 3-00
ZGS

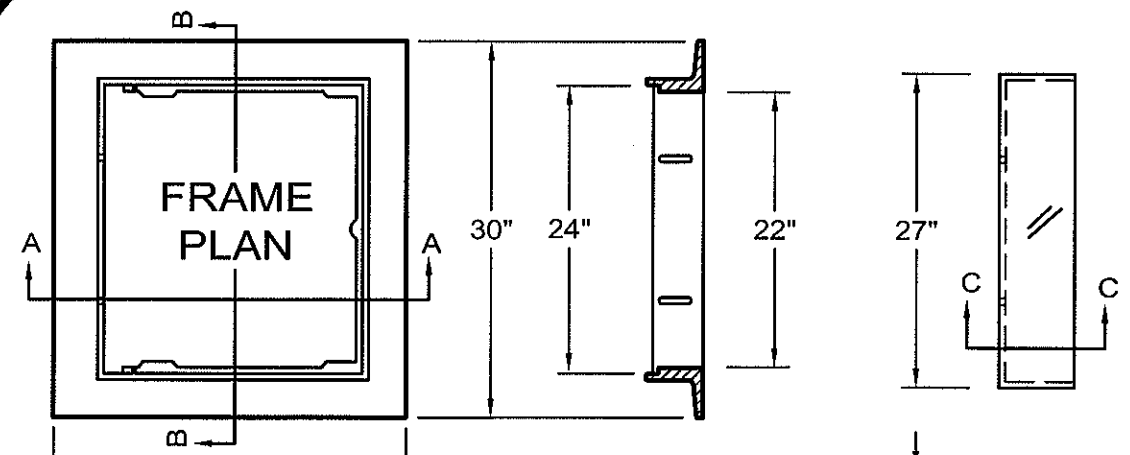
MONUMENT DETAILS

PAGE NO:

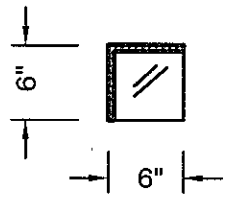
12

CITY OF PULLMAN
ENGINEERING DIVISION

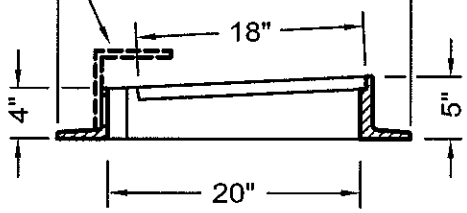
ADOPTED: January 23, 2007



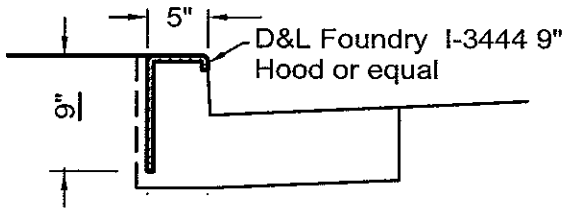
SECTION B-B



SECTION C-C
IMBEDDED HOOD

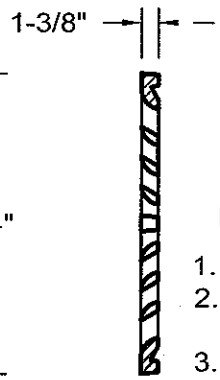


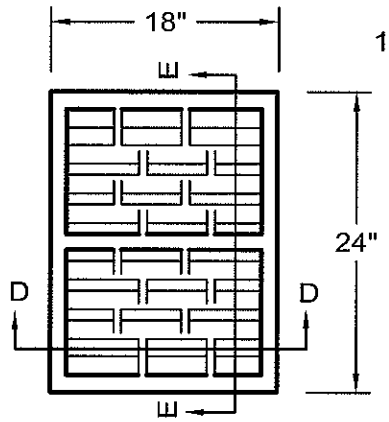
SECTION A-A



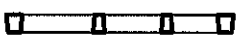
ALT. SECTION C-C
HOOD FLUSH WITH
TOP & FACE OF CURB

SECTION E-E





GRATE PLAN



SECTION D-D

NOTES:

1. Frames to be ASTM A48 class 30 grey iron.
2. Grate castings to be ASTM class 80-55-06 ductile iron.
3. Lids and frames shall be machine ground to prevent rocking.
4. See Standard Drawing # 7 for rolled curb frame and grate section.
5. Use East Jordan Iron Works # 7701 (Was IFCO # 571) frame with Type B hood, D&L Foundry grate and frame No. I-4431 and I-4434, or equal.
   Use style D2 grate (shown) at low points. Otherwise, use style D1 (one-way) grate, with vanes pointing against flow.

AutoCAD: Catch Basin Frame & Grate

06 dwc
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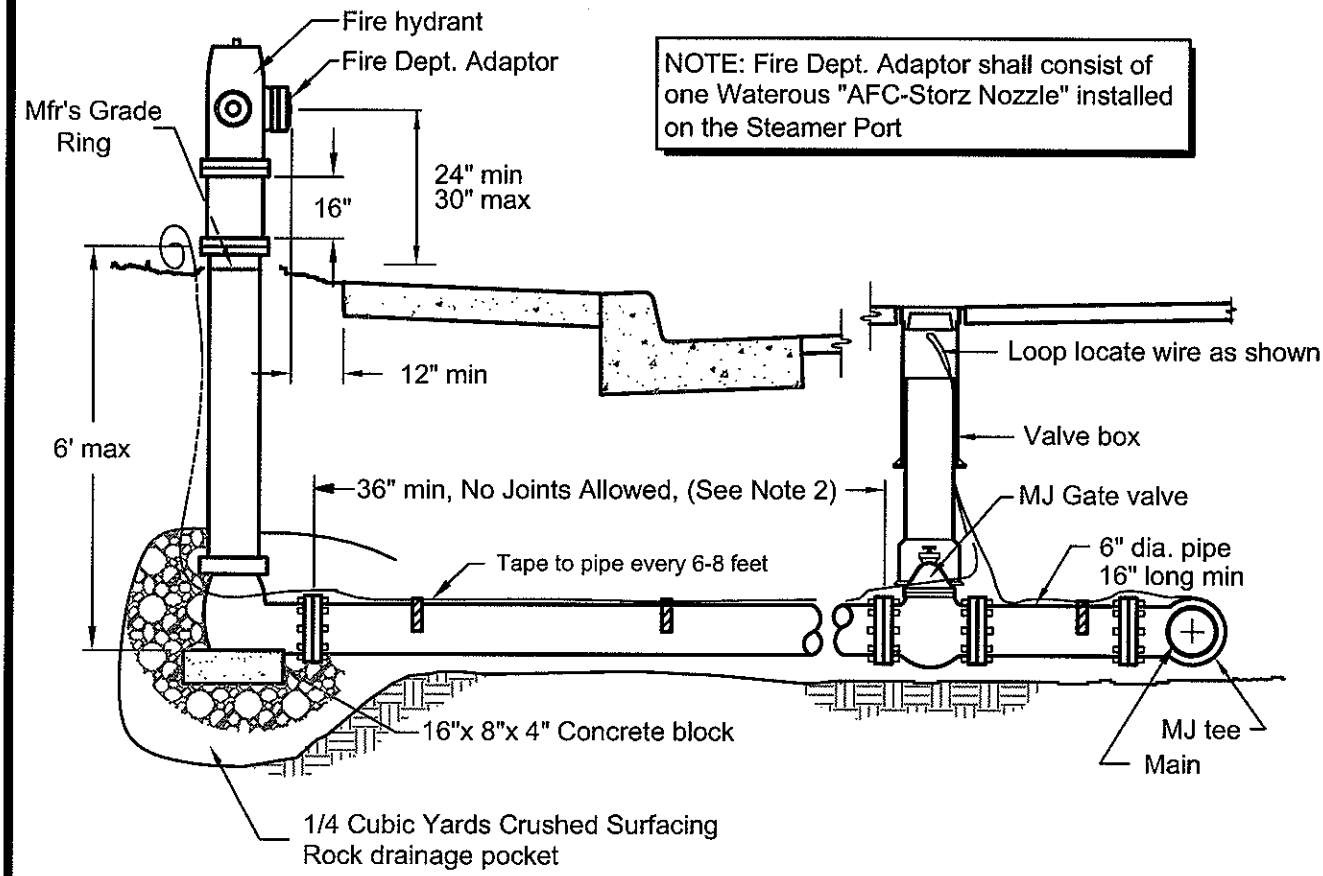
CATCH BASIN FRAME AND GRATE

PAGE NO:
13

CITY OF PULLMAN
ENGINEERING DIVISION

ADOPTED: January 23, 2007



NOTE: Fire Dept. Adaptor shall consist of one Waterous "AFC-Storz Nozzle" installed on the Steamer Port

TYPICAL INSTALLATION

NOTES:

1. Hydrant shall be mechanical joint "Waterous Pacer" Model WB-67-90-16" with two 2-1/2" NST nozzles and one 4-1/2" pumper connection, National Standard operating nut and caps, left-hand opening direction, and 5-1/4" valve opening.
2. If the distance from the hydrant to the tee exceeds 18 feet, restrain the pipe per Std. Dwg. 15.
3. All joints shall be mechanical joints restrained with Romac Grip Rings or Foster connectors, unless otherwise approved by the Engineer.
4. Final grading in a 3-foot radius around the hydrant shall be between 24" and 30" below the center of the hydrant ports.
5. Place hydrant so that the manufacturer's grade ring is 2" above sidewalk, curb, or adjacent ground level.

AutoCAD: Fire Hydrant

dwc-06
ZGS

FIRE HYDRANT

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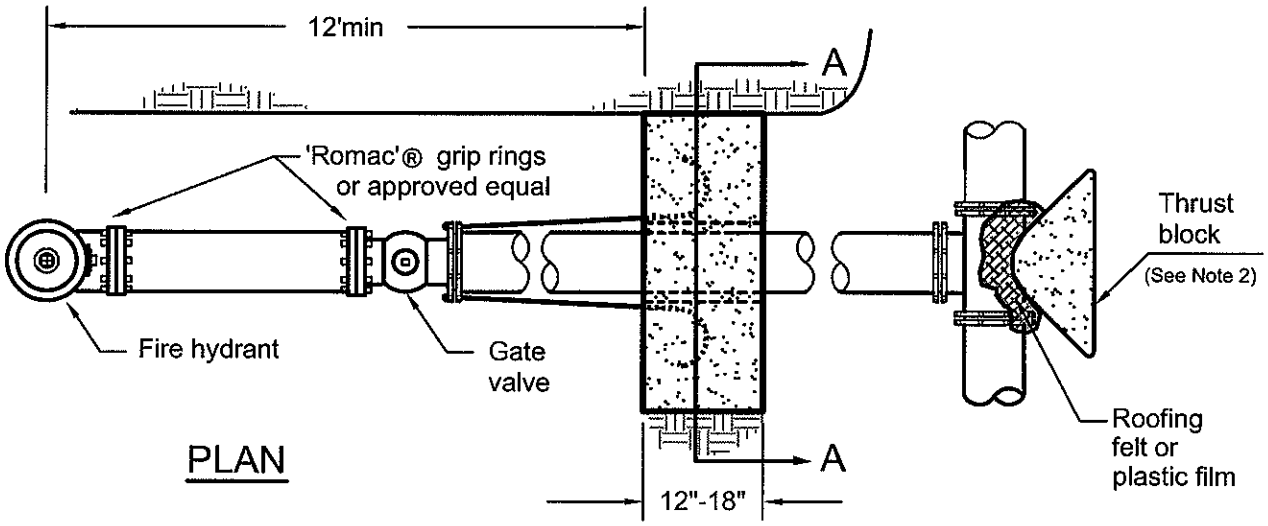
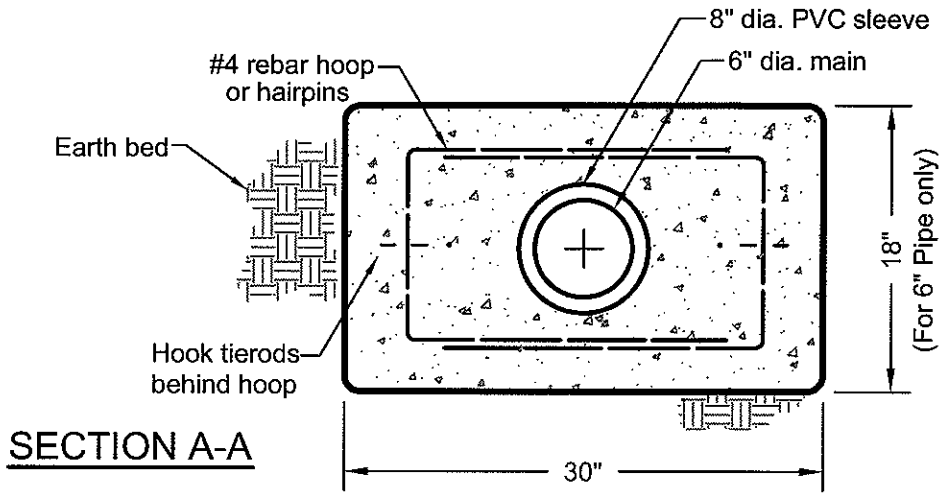
CITY OF PULLMAN
ENGINEERING DIVISION

ADOPTED: January 23, 2007



PLAN



SECTION A-A

NOTES :

1. Make threaded and bolted 3/4" diameter tierod connections to fitting with approved ductile lugs or 90° eye bolts.
2. Use 5-sack cement concrete. Calcium additive not allowed.
3. Wrap fittings with 6-mil plastic sheet.
   Concrete must not interfere with flange bolt removal.
4. Tierods are not allowed between the hydrant and its gate valve.
5. Non-continuous circular connector rings, such as the Megalug brand are not allowed.

dwc 12-01
dwc 3-00

AutoCAD: Thrust Block - Saddle

ZGS

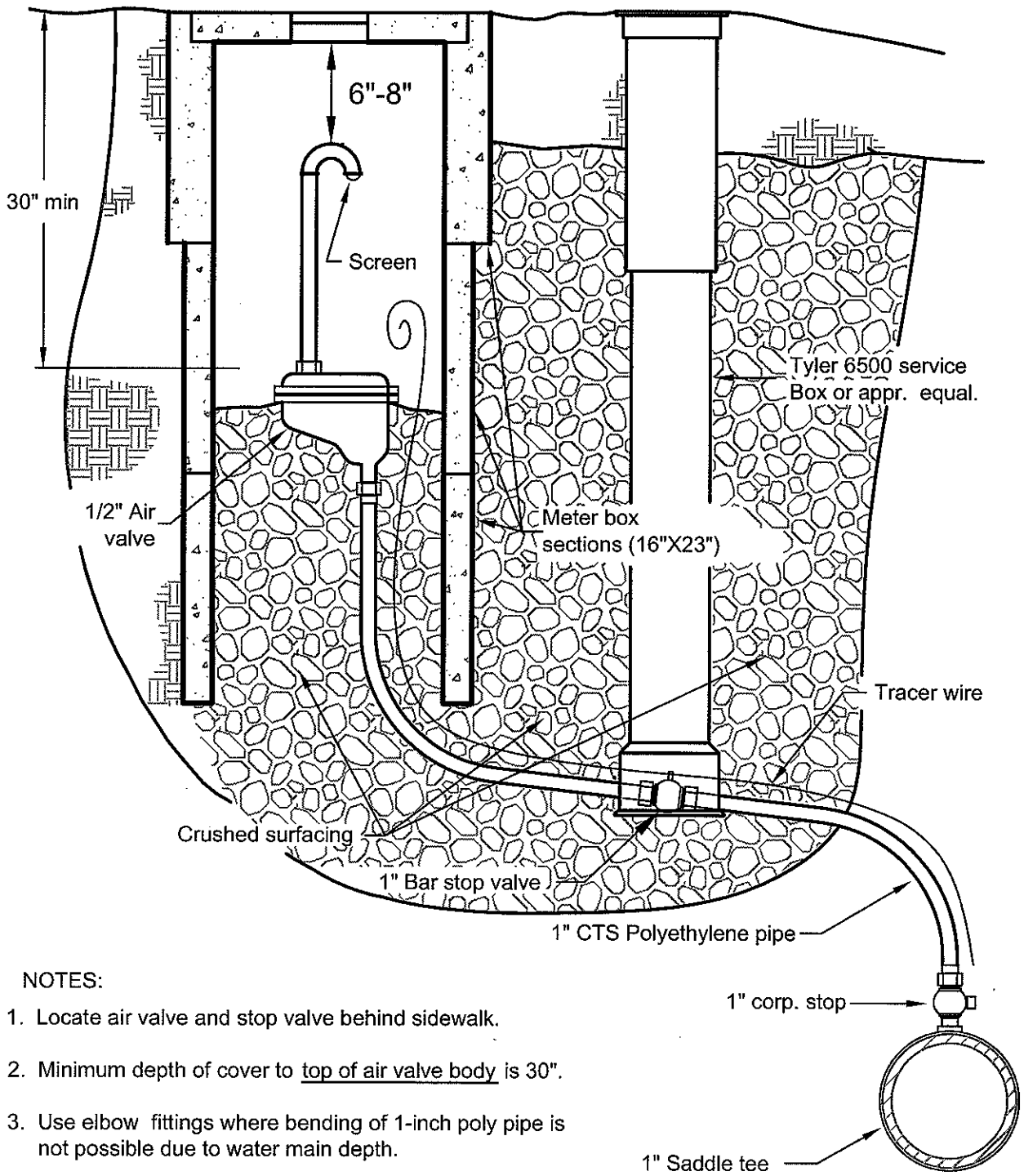
SADDLE BLOCKS

PAGE NO:

15

CITY OF PULLMAN
ENGINEERING DIVISION

ADOPTED: January 23, 2007



NOTES:

1. Locate air valve and stop valve behind sidewalk.
2. Minimum depth of cover to top of air valve body is 30".
3. Use elbow fittings where bending of 1-inch poly pipe is not possible due to water main depth.

AutoCAD: Waterline Air Valve

dwc 3-00
DRR

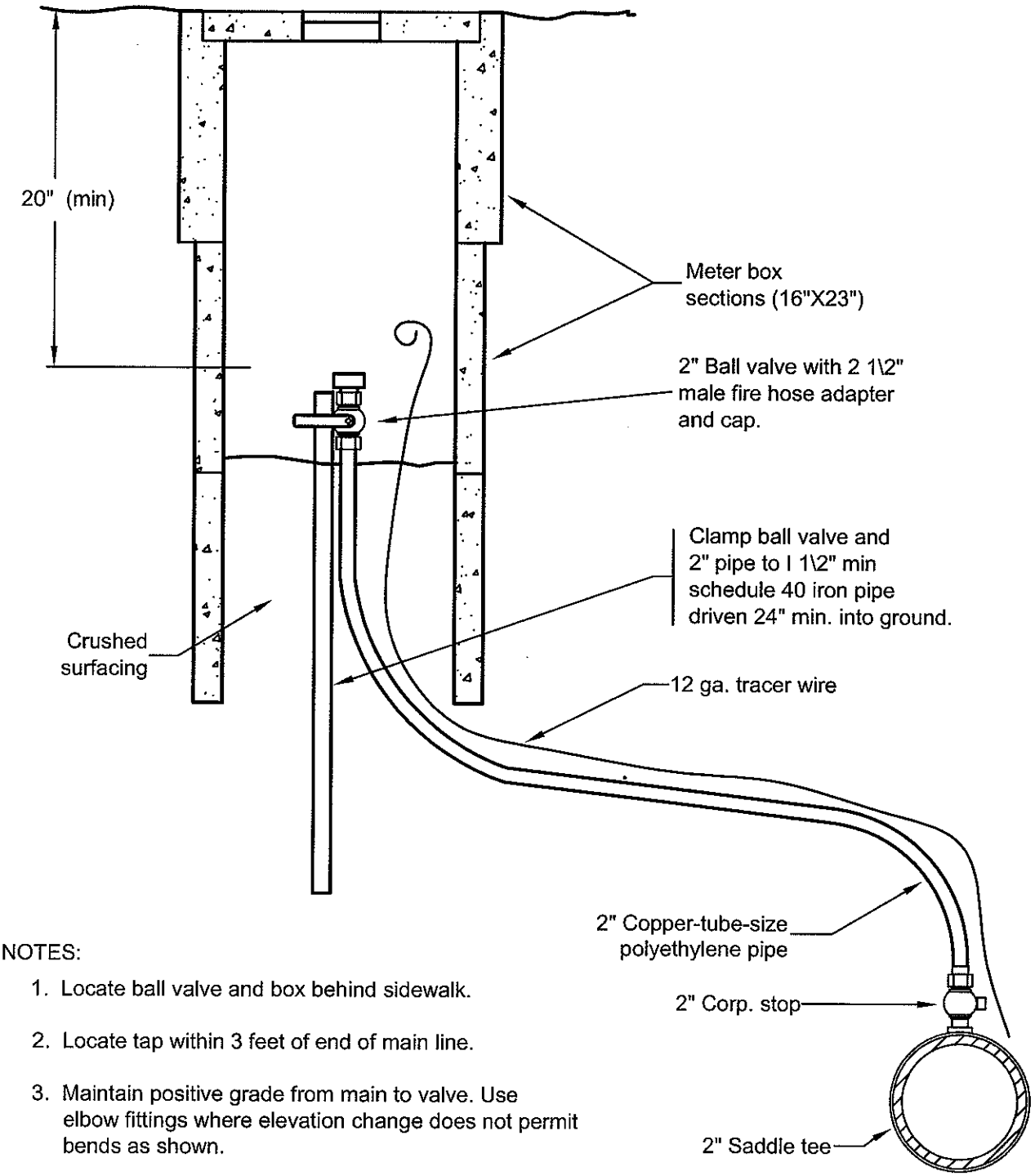
AIR VALVE

PAGE NO:

16

CITY OF PULLMAN
ENGINEERING DIVISION

ADOPTED: January 23, 2007



NOTES:

1. Locate ball valve and box behind sidewalk.
2. Locate tap within 3 feet of end of main line.
3. Maintain positive grade from main to valve. Use elbow fittings where elevation change does not permit bends as shown.

AutoCAD: Waterline Blowoff Assy

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DDR

BLOWOFF ASSEMBLY

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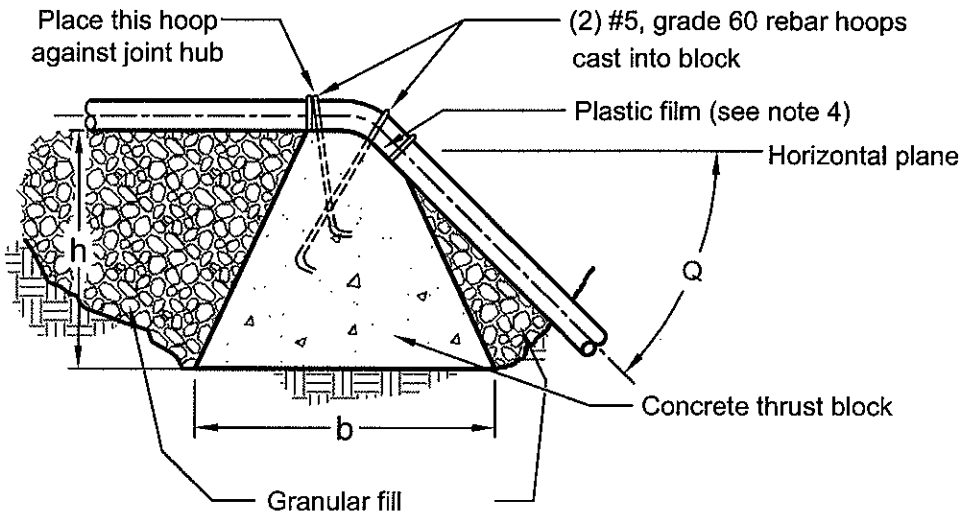
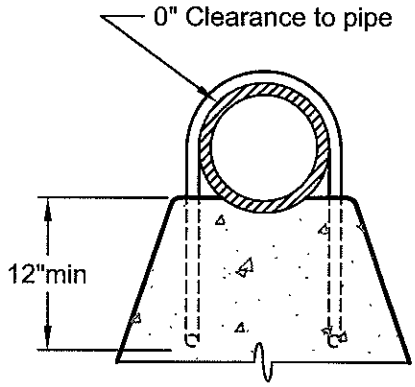
CITY OF PULLMAN
ENGINEERING DIVISION

ADOPTED: January 23, 2007



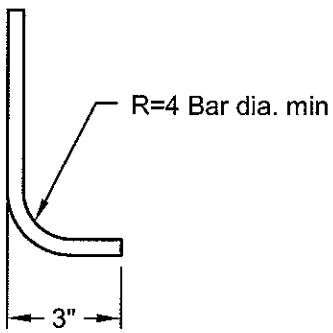
SIDE VIEW



HOOP DETAILS

NOTES:

1. Base dimensions (b) and height (h) to be approximately equal.
2. Use 5-sack cement concrete. Calcium additive not alllowed.
3. Do not exceed calculated size by more than 10% .
4. Wrap fittings in 6-mil plastic. Concrete shall not interfere with flange bolt removal.
5. Block size determined by $B_V = T/W_c$
   Where :
   B_V = Volume in cubic feet
   T = Vertical force element = PA sin Q
   W_c = Weight per cubic foot of concrete (150 lb./cu. ft.)
   P = Test pressure at block elevation (psi)
   A = Cross-sectional area of pipe (sq. in.)
   Q = Fitting angle Q≤45 degrees .



BAR BENDING DIAGRAM

AutoCAD: Thrust Block - Gravity

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GRAVITY THRUST BLOCK DESIGN

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ENGINEERING DIVISION

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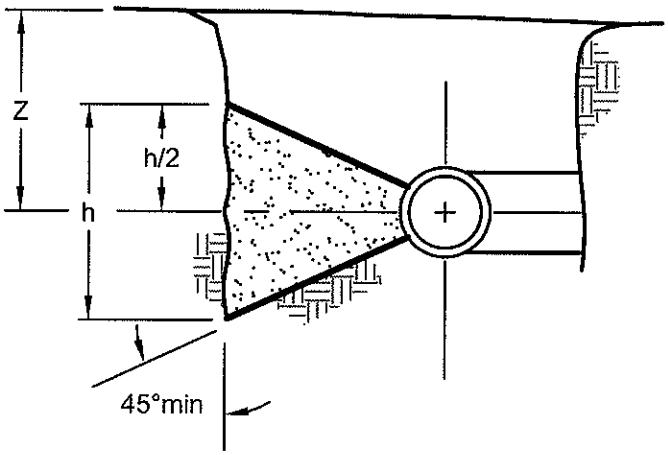
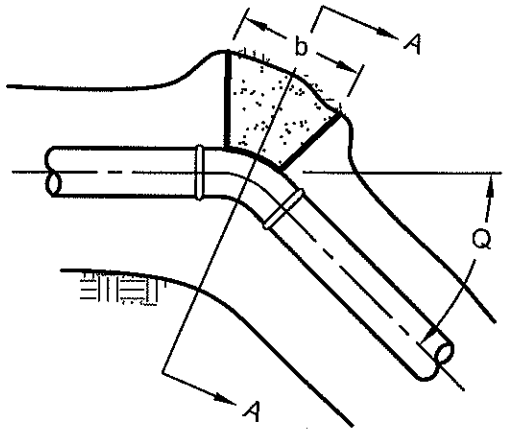


SECTION A-A



PLAN

NOTES:

1. Use 5-sack (min) concrete; 2% calcium (max).
2. Do not exceed the calculated block dimensions by more than 10% .
3. Protect fitting with 6-mil plastic before pouring thrust block.
   Concrete shall not interfere with flange bolt removal.
4. Determine block dimensions as follows :

Block Bearing Area = hb = Thrust / Passive soil pressure = T / Pp

Thrust (lbs) = 2PA sin(Q / 2) or T = PA for ends and tees
Where : A = Cross-sectional area of pipe (Square Inches)
P = Test pressure at fitting (psi)
Q = Fitting angle

P_p = Passive soil pressure (lbs/Sq. Ft) .
P_p for saturated clay = gZ + 2C
P_p for Palouse Loess at optimum moisture content = $gZ \tan^2(45° + F/2) +$
$+ 2C \tan(45° + F/2)$
P_p for granular material = $gZ \tan(45° + F/2)$
Where : g = Weight per cubic foot of soil
Z = Depth in feet from ground surface to center of pipe
C = Cohesion factor = 200 psf for Palouse Loess
F = Internal friction angle of soil. Use 28° for Palouse Loess, and
42° for granular material

AutoCAD: Thrust Block - Bearing

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BEARING
THRUST BLOCK DESIGN

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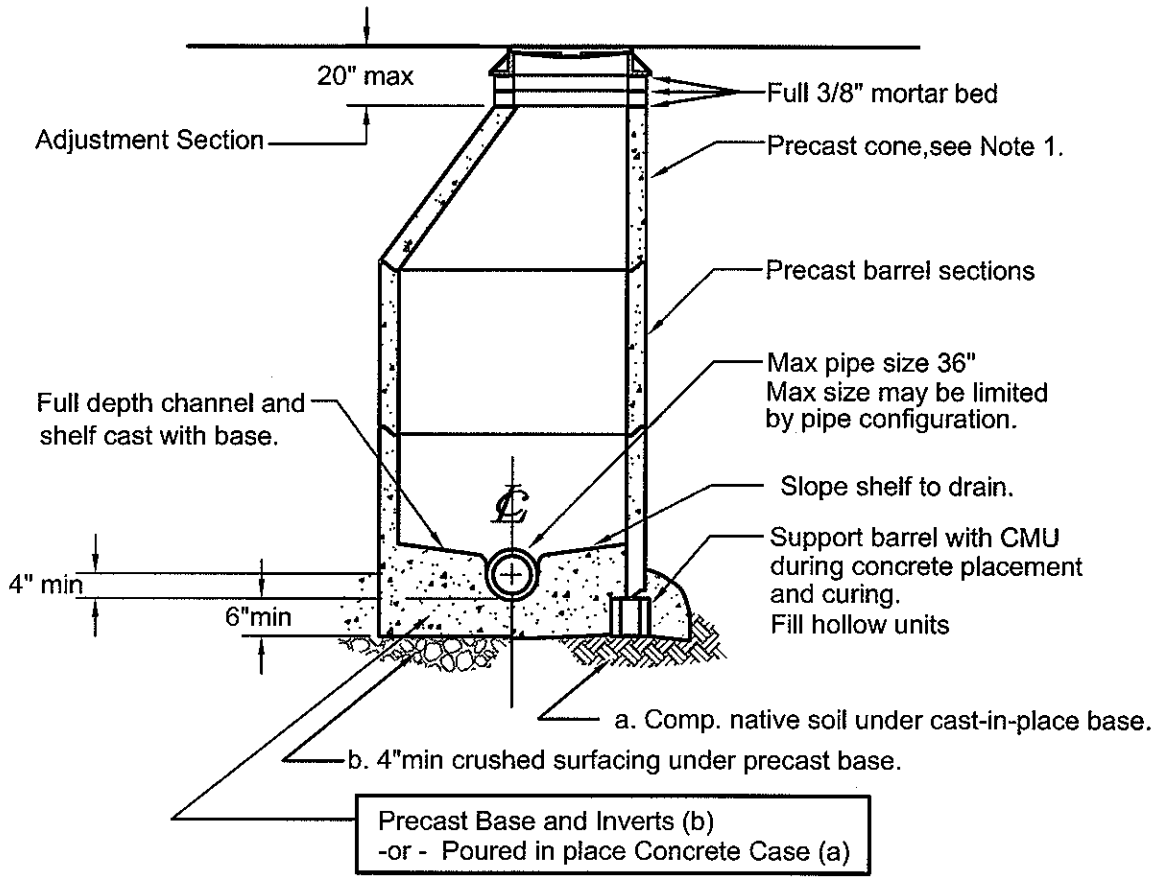

NOTES:

1. Use eccentric cones except when specifically approved by the Engineer. Place the cone entry hole above the outlet pipe. Flattops are not allowed.

2. Provide precast barrel sections and cones that meet Standard Specification # 9-12.4. Precast base and invert sections with integral seals may be used.

3. Provide manhole cones and barrel sections without steps or rungs.

4. A minimum of 8 inches of wall shall remain between holes.

5. Where manholes are located out of the street improvement area, install an 6-foot (min) steel fence post within 3 feet of the manhole extending 3-½ feet above grade.

AutoCAD: Manhole - Std 48 inch

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MANHOLE, 48 INCH DIAMETER

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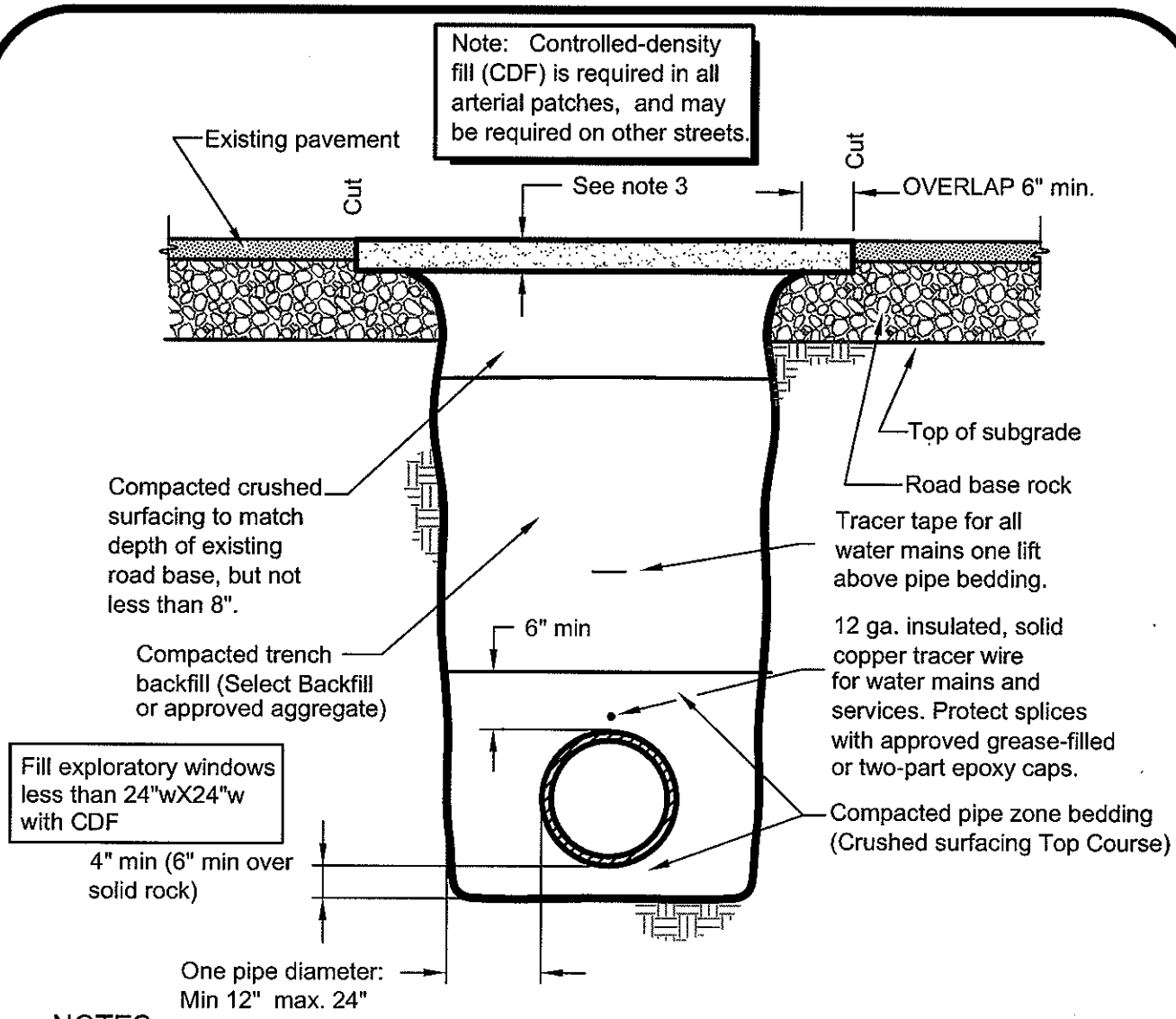

NOTES:

1. Cut pavement with a neat, vertical edge at a minimum of 6 inches from the trench edge.
2. Construct cement concrete patches as directed by the Engineer.
3. Patches shall be as thick as existing pavement, but no less than 3 inches on arterial streets, and no less than 2 inches on other streets.
4. Tape the tracer wire to top of water pipe. Splice wire with sealed direct-bury wire nuts. Terminate wire at hydrants, valve boxes, and other surface appurtenances.
5. Compact bedding and backfill per ASTM D1557 (Modified Proctor method) as follows :
   A. Bedding zone : 90% (min)
   B. Trench backfill : 90% (min) in 6-inch lifts, 95% for top 6 inches, under street zones; 85% (min) outside street zones.
6. Minimum depth of bury shall be from finished grade to top of pipe :
   A. Storm sewer : 24 inches
   B. Sanitary sewer : 36 inches
   C. Water pipeline : 48 inches

AutoCAD: Pipe & Trench Std

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STANDARD UTILITY TRENCH and Pipeline Placement

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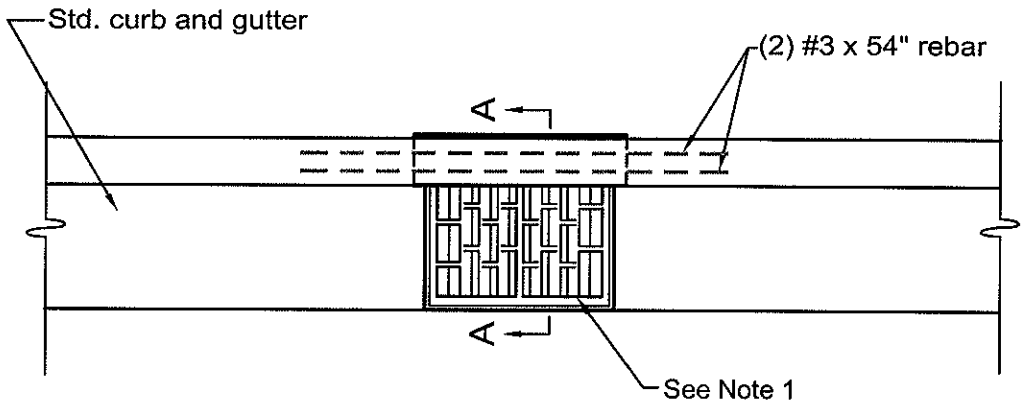
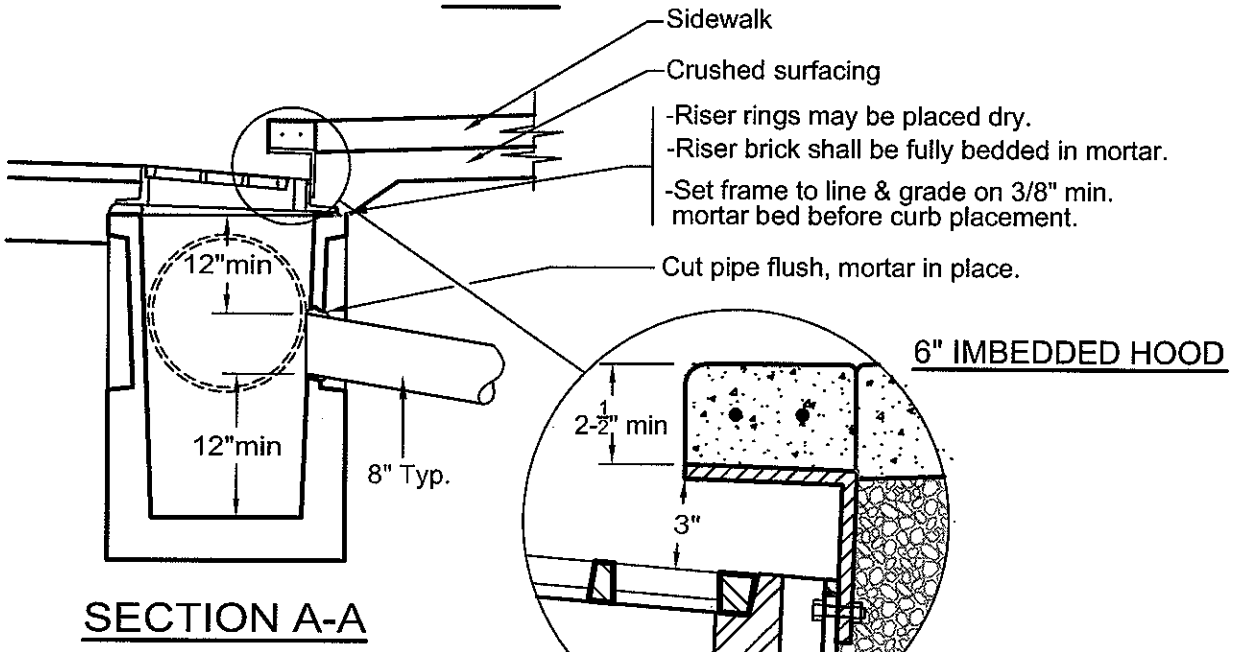


PLAN



SECTION A-A

NOTES:

1. Frame and grate per Standard Drawing No. 13.
2. Depress back of lid 1 inch at flowline to provide a 2 - inch fall across the grate.
   Gutter lip and top of curb are not depressed.
3. Use WSDOT Type 1 precast catch basin box.
4. Set the catch basin box on 2 inches (min) layer of crushed surfacing leveling course.
5. Set frame to provide 90% (min) clear drainage opening with reference to the box opening.
6. Storm drain catch basin leaders shall be installed with no less than 2 feet of cover as measured from finished grade at the catch basin.

AutoCAD: Catch Basin

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CATCH BASIN

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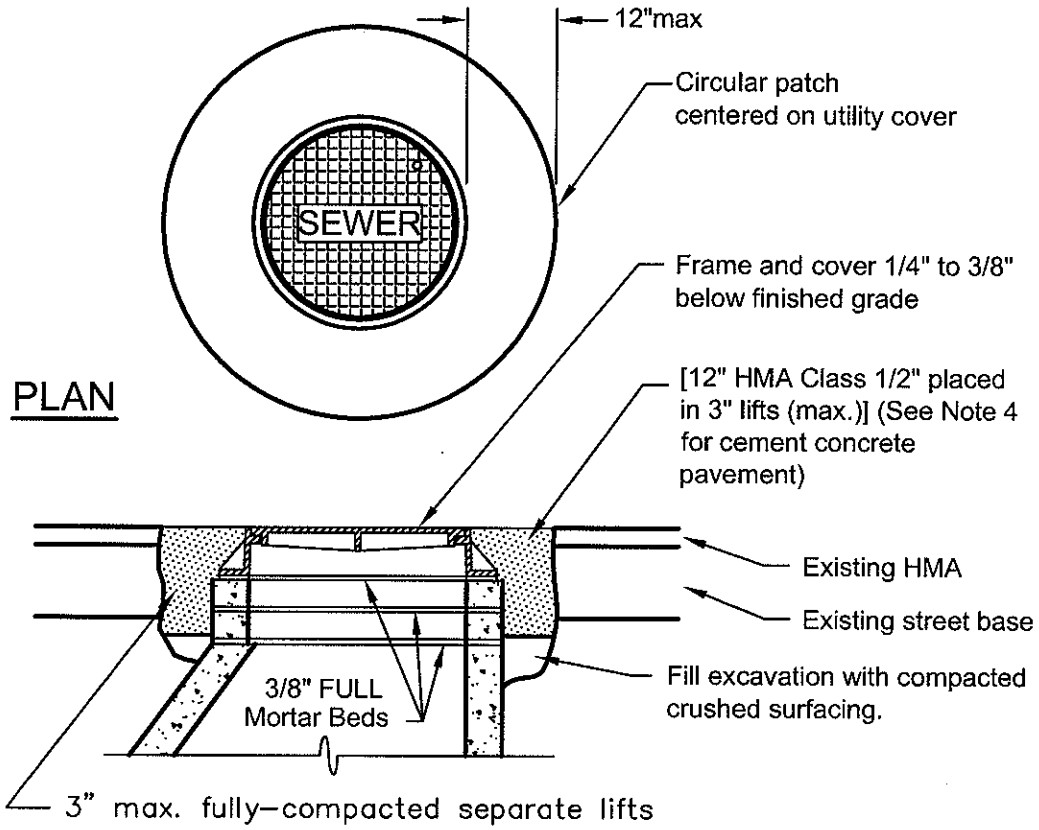

TYPICAL SECTION THROUGH MANHOLE

NOTES:

1. Keep the excavation to the minimum depth required to adjust the cover.

2. Place crushed surfacing in 6-inch lifts. Compact to 95% of maximum theoretical density per ASTM D 1557 (Modified Proctor method) from the bottom of the excavation to within 12 inches of finished grade. Place, compact HMA, Class 1/2" in 3-inch lifts to finished grade. All compaction shall utilize approved methods.

3. Place manhole adjustment rings and frames on a full bed of Type S mortar to ensure full bearing. (In unpaved areas outside of street zones, place manhole frames on a full bed of manhole barrel mastic).

4. Cement concrete pavement :
   A. New construction : Provide a circular adjustment hole as shown.
   B. Existing pavement : Provide a diamond-shaped hole as directed by the Engineer.
   C. Patch the hole with 7 sack (3/4") Portland cement concrete as thick as the existing pavement, but not less than 5-1/2 inches thick.

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AutoCAD: Utility Cover Adjustments

UTILITY COVER ADJUSTMENT

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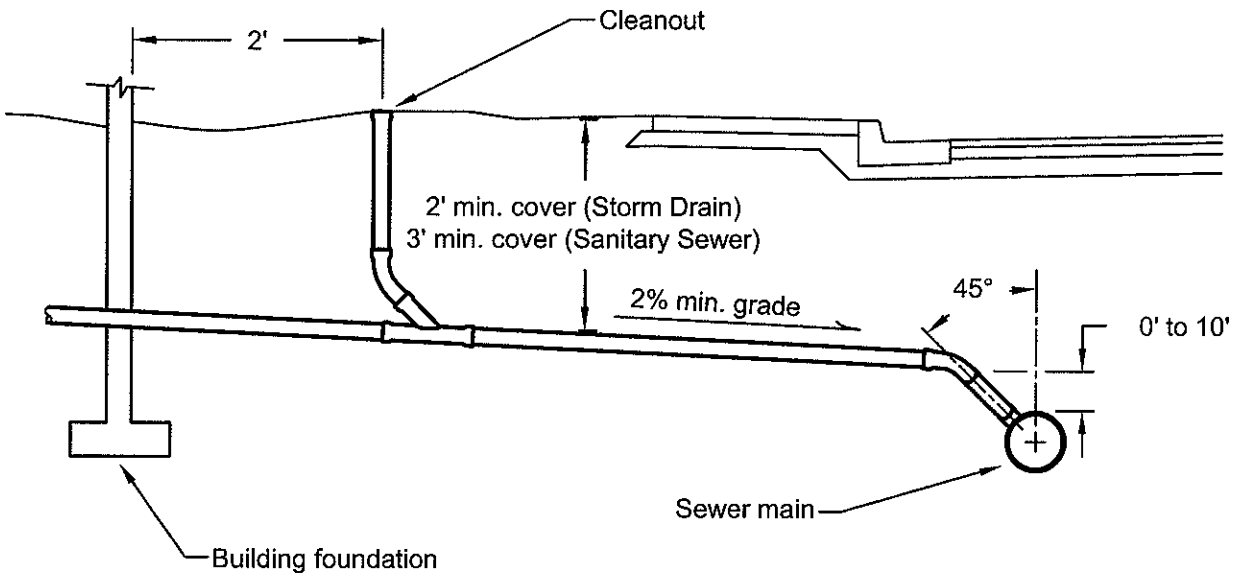

TYPICAL SECTION

NOTES:

1. Pipe diameter shall be 4 inches or greater. See specifications for acceptable materials.
2. Pipes stubbed out for future building connections shall be plugged with a fitting approved by the manufacturer.
3. Maximum distance between cleanouts shall be 100 feet. The maximum aggregate change in direction between cleanouts shall be 135°. Construct additional cleanouts as necessary.
4. A water service and a sewer service may be placed in the same trench if the water service is placed on an undisturbed earth shelf 12 inches (min) above the side sewer.
5. Abandoned sewer services shall be plugged within 5 feet of the property line with a fitting approved by the manufacturer or a minimum 2-foot long poured concrete plug.

AutoCAD: Side Sewer Installation

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SIDE SEWER INSTALLATION (Storm and Sanitary Sewer)

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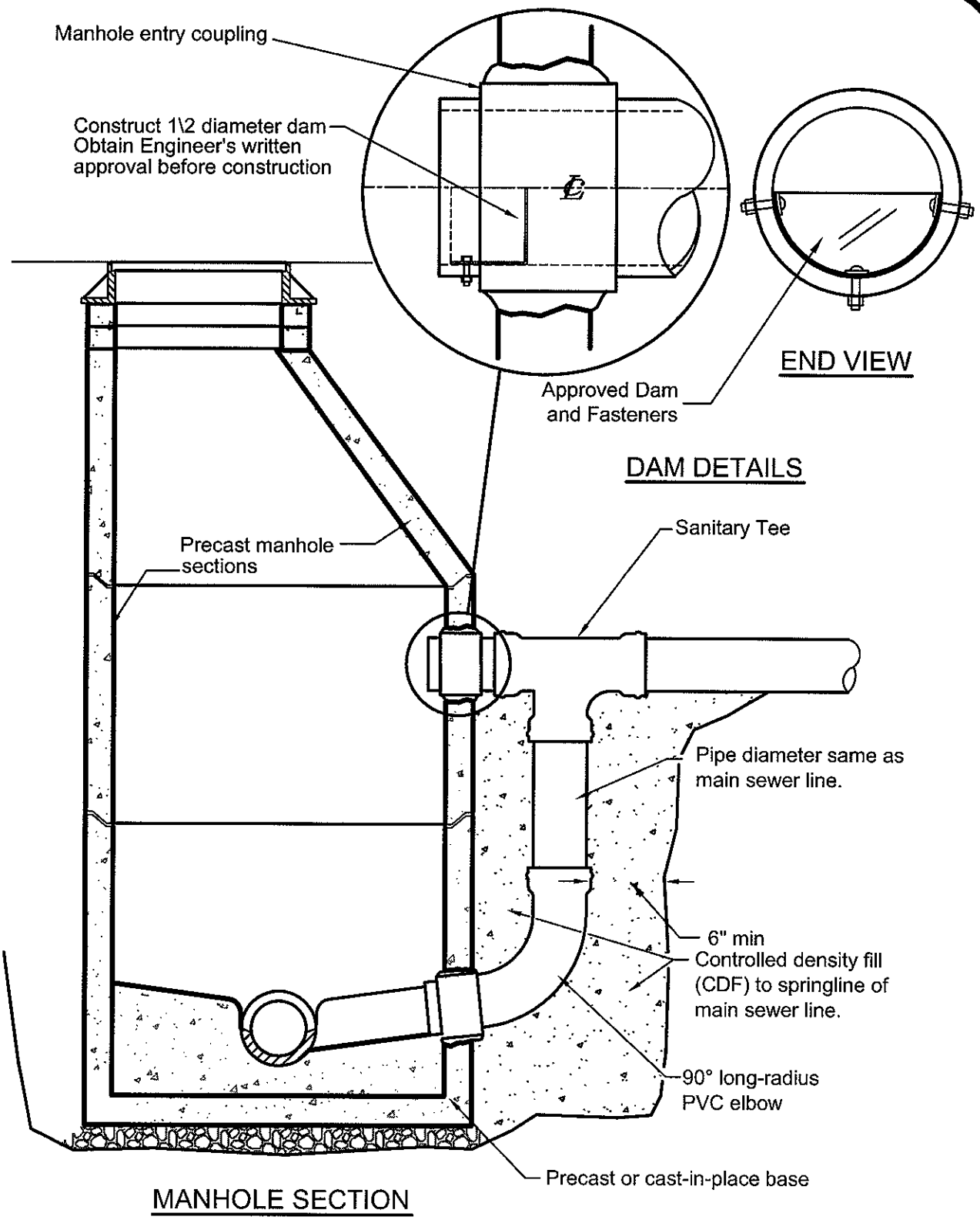

AutoCAD: Manhole - Drop Style

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DROP MANHOLE

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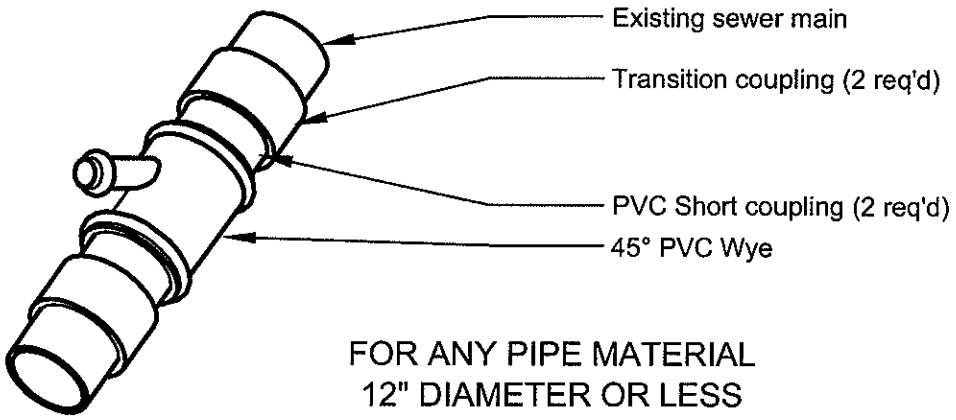
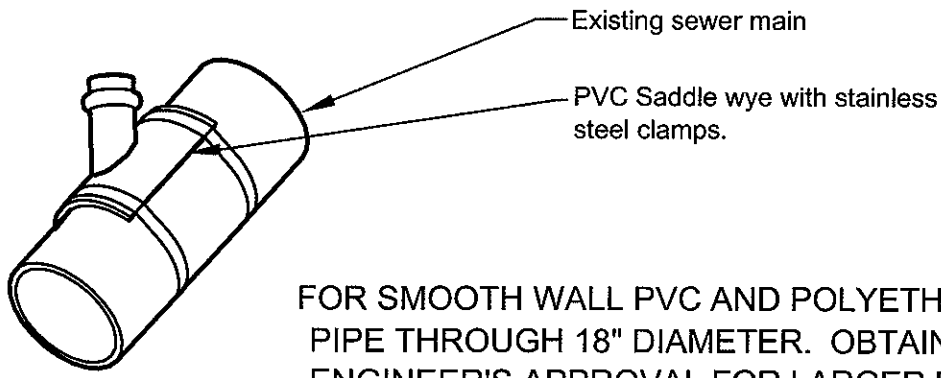
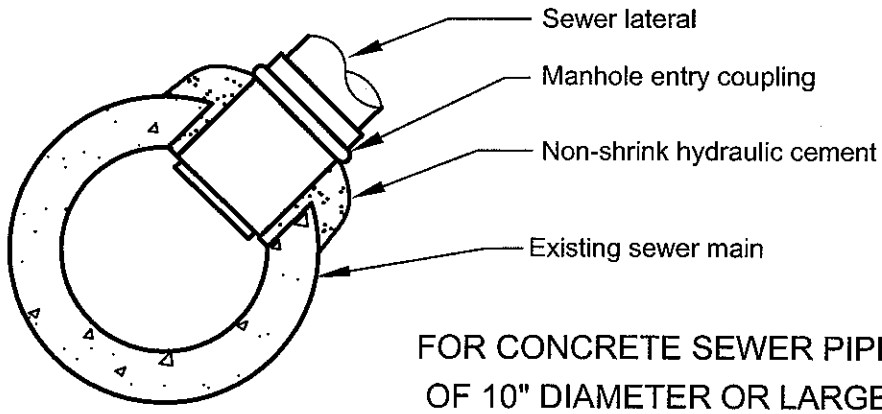


FOR ANY PIPE MATERIAL
12" DIAMETER OR LESS



FOR SMOOTH WALL PVC AND POLYETHYLENE PIPE THROUGH 18" DIAMETER. OBTAIN ENGINEER'S APPROVAL FOR LARGER PIPE.



FOR CONCRETE SEWER PIPE
OF 10" DIAMETER OR LARGER

NOTES:

1. For clay, cement concrete, or asbestos concrete pipe of 12-inch diameter and larger use 'Romac' ® Style "CB" sewer saddle.

2. Tap opening shall be in the top half of the tapped pipe. Tap shall intersect the main at approximately 45 degrees .

AutoCAD: Sewer Taps for Existing Mains

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SEWER TAP OPTIONS FOR EXISTING MAINS

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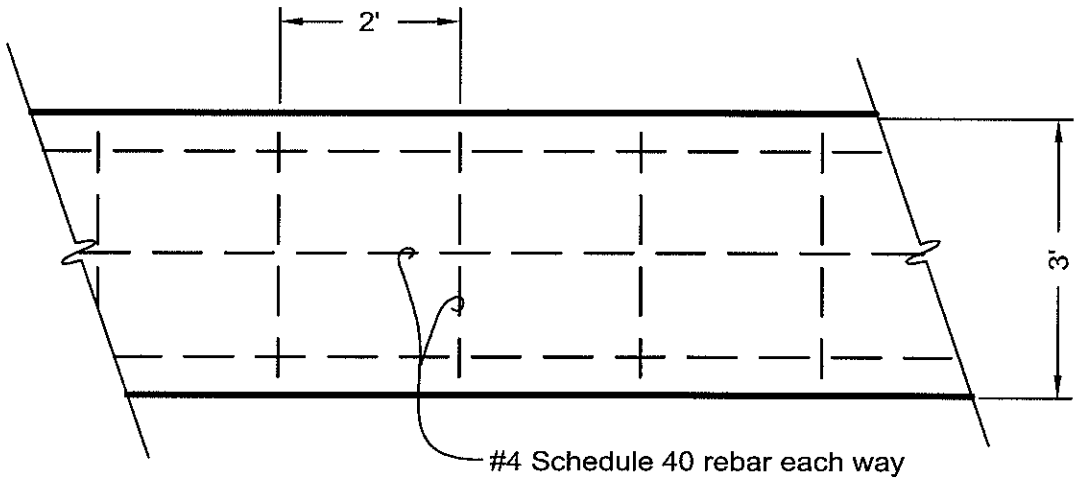
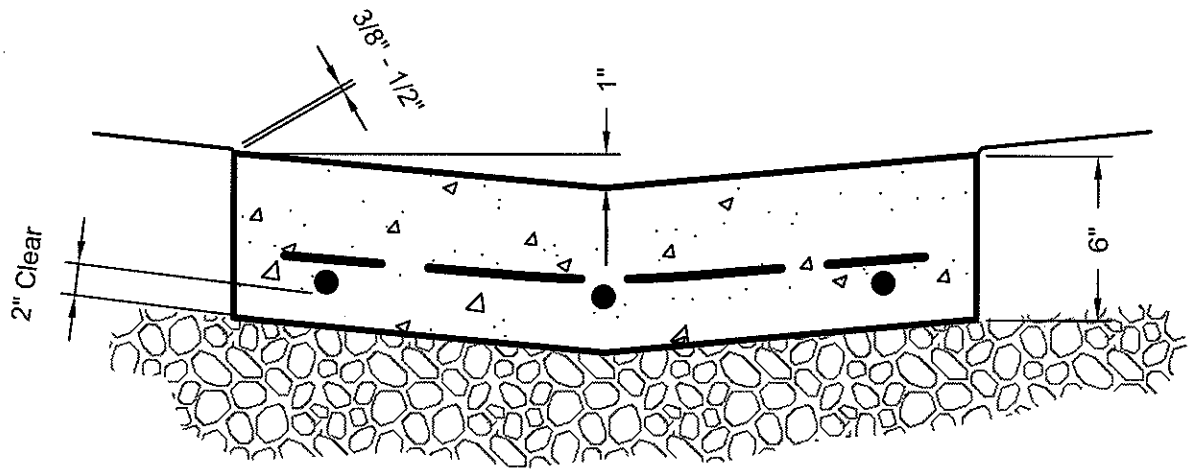


PLAN



TYPICAL SECTION

AutoCad: Valley Gutter

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VALLEY GUTTER

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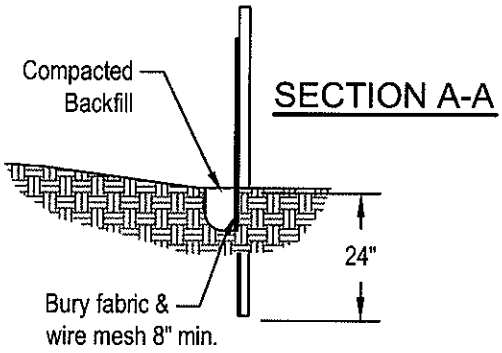
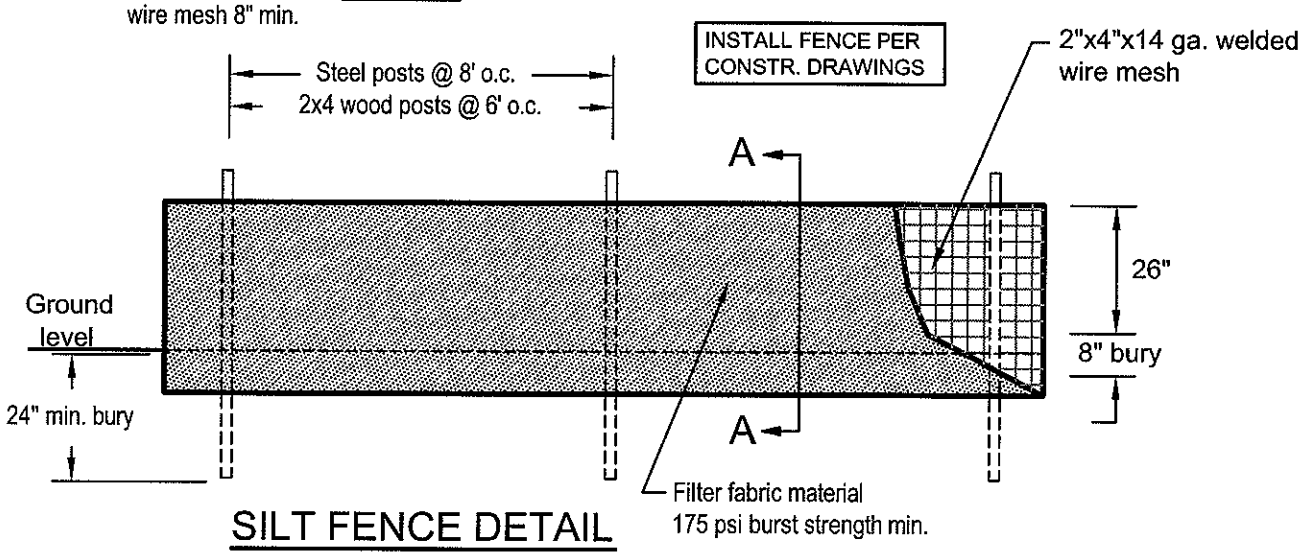
SILT FENCE NOTES:

1. Attach fabric to mesh top and bottom @ 24" o.c. using approved metal devices.
2. Attach mesh to posts with approved metal devices @12" o.c.
3. Fabric top shall be 26" min. above ground

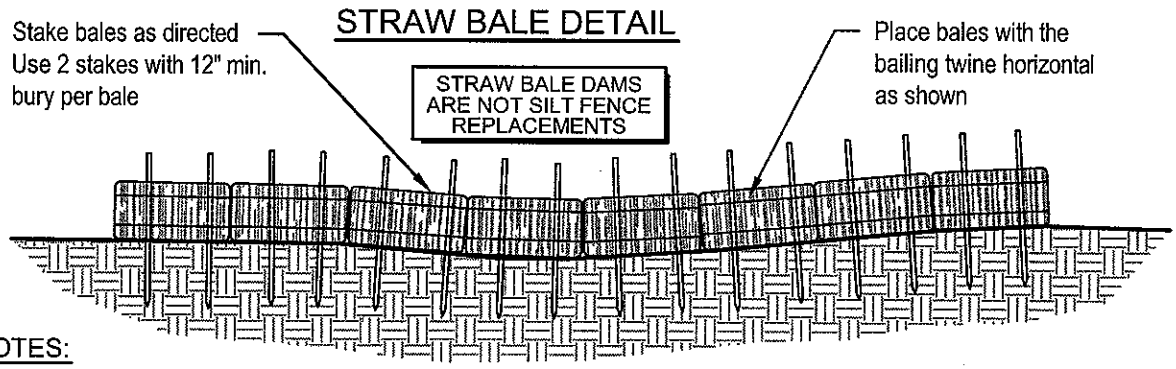
Fence with 2x2 pre-installed posts not allowed



SECTION A-A



SILT FENCE DETAIL



STRAW BALE DETAIL

NOTES:

1. Place straw bales as directed by the engineer to slow and control runoff on slopes and in swales and gullies. Do not use to replace required silt fencing.
2. Siltation and detention controls shall be maintained for one year after construction is complete and permanent erosion control measures are operational.
3. Hydroseeding may replace seeding and straw mulching. Use seed, wood fiber or split straw mulch, and starting fertilizer. Tack with PAM or Guar. Plantago tackifier is not approved. Apply 2000 lbs/acre, minimum, except apply 2500 lbs/acre on slopes steeper than 3 to 1.

AutoCAD: Erosion Control

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EROSION BARRIERS

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